



# International Abstract of Surgery

SUPPLEMENTARY TO

Surgery, Gynecology and Obstetrics

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*Supplementary to*  
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# INTERNATIONAL ABSTRACT OF SURGERY

JULY, 1930

## LANDMARKS IN SURGICAL PROGRESS

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### SURGERY OF THE CENTURY 1830-1930<sup>1</sup>

WITH the opening of the century which we commemorate, 1830-1930, the first fifty years of our national existence had been celebrated and anxiety as to the permanence of the government had been generally allayed. Jefferson, Madison, Monroe, and the two Adams observed the passing of the semicentennial with genuine thanksgiving. The Monroe Doctrine had been promulgated and a period of westward migration and development, as well as greatly increased foreign commerce, had begun. The country was prosperous and beginning to feel an intense national pride of existence. The battle of New Orleans, fought subsequent to the declaration of peace and in the same year as Waterloo, had made of Andrew Jackson a popular idol, and Jackson and Calhoun had but recently swept into power on the slogan "the people shall rule," defeating John Quincy Adams and Richard Rush, the latter the talented son of Benjamin Rush. The hero of New Orleans had but begun his wholesale official decapitations and the ruthless exercise of the spoils system.

The spectacular duel between Clay and Randolph was still a topic for drawing room gossip in official circles. Jefferson and John Adams had but recently passed away—Jefferson dying poor in purse but rich in the pride of accomplishment and in the love of the people. Monroe was strug-

gling with poverty while Madison was ending his days in comfort at Montpelier.

Facilities for communication had increased enormously. The first steamship had crossed the Atlantic, the steam locomotive had been perfected, and the first railroad in the United States had carried its first passengers. The harvesting machine had been invented, and the Morse telegraph was soon to come with a line joining Washington and Baltimore. Joseph Lister's father, the Quaker wine merchant of London, student of optics, had perfected an acromatic microscope. Daugerre had but recently announced his discovery, the British Medical Association had been founded, and by the end of the first third of the nineteenth century, educational and scientific institutions and societies had multiplied many fold. Two years after the beginning of our period, England passed the first anatomical act, thus destroying the business of the resurrectionists. Johannes Mueller, the father of scientific medicine in Germany, had begun his great work, creating a school from which trained investigators were to carry forward physiological thought.

The city of Baltimore, with a population of 70,000, third in size in the United States, was growing apace, and ten years after the yellow fever epidemic of 1819-20, the city had assumed definite leadership in point of shipping. Charles Carroll (1737-1832), the last surviving signer of the Declaration of Independence, was the pride

<sup>1</sup> Rush and Calhoun were again to oppose each other in the matter of the legacy of Southam which, through the legal ability of Rush, was paid to the United States and the acceptance of which by Congress was bitterly fought by Calhoun.

<sup>2</sup> Read at the Centennial Celebration of the Library of the Medical and Chirurgical Faculty of the State of Maryland held in Osler Hall Baltimore April 23 1930.

of social Baltimore, and his participation in the ground breaking ceremonies inaugurating the construction of the Baltimore and Ohio Railroad was a gala event

World surgery of the period was the surgery of Percival Pott, Astley Cooper, Dupuytren, Valpeau, John Hunter, and their contemporaries, surgery that showed marked advances beyond that of Pare and the great Wiseman. Improvements had come with increased knowledge of the nature of disease, born largely of clinical experience. The scope of surgery, however, was exceedingly limited. The pupils of Hunter and Cooper ligated blood vessels, cut for stone, dressed fractures, reduced dislocations, and performed amputations, but with these the chapter closed well nigh abruptly. Occasionally, here and there, some bold spirit, such as McDowell, arose or stark necessity compelled the blazing of a new trail through the surgical wilderness.

The *Maryland Medical Recorder* for 1829-30 fairly mirrors the surgical interest of the day. Articles therein published cover such subjects as fracture of the spine, stricture of the urethra, osteosarcoma, gunshot wounds and dislocation of the thigh. The volume contains also a caustic and belittling review of the recently issued *Practice of Surgery* by William Gibson. According to the reviewer, who was no doubt Jameson, the editor of the journal Gibson's book was a poor thing that dealt much more with medical remedies than with surgical procedures.

Roux, in narrating his surgical observations in London in 1814, notes with considerable pride the numerous opportunities afforded him of instructing the English surgeons. Among other procedures he demonstrated to Astley Cooper the application of moxa to white swellings of the joints. He instructed Brodie in the application of a ligature to a nasal polyp. He applied the bandage of Desault to fracture of the clavicle and operated for cataract for Lawrence and Travers.

But even Roux sensed the spirit of progress, a new era of study and of experiment, and he notes that in Brodie, Travers, Lawrence, Charles Bell, Cline and a few others a new generation had arisen. He says that Brodie "unites a taste for physiological experiments and research to great surgical talents, and we are grateful to him for the significant observation that surgery in England, thanks to John Hunter, and since his time, enjoys high consideration and has been placed at least in the same rank as medicine." Catching the spirit of English surgery, he further observes that in sharp distinction to the custom

in France, everyone seemed eager to acquire fresh knowledge. "There are some hospitals in London," he observes, "which I have never once entered without seeing the chiefs surrounded by other surgeons of that capital or practitioners of distant towns. It is extremely rare to see our young physicians or surgeons, after having once quitted the schools, frequent the places where they have received their first instruction."

In addition to the younger London group named by Roux, and contemporary with them should be mentioned James Syme (1799-1870) of Edinburgh, who was beginning his long career of surgical instruction, Abraham Colles (1773-1843) of Dublin, who had been teaching for many years and who had described many new and important procedures, and Valpeau (1795-1867) in France, who was well established as a successful teacher and operator. Dieffenbach (1792-1847) and Stromeyer (1804-1876) were leading surgical development in Germany, while Pirogoff (1810-1881), Cermann trained, was to lead the van in Russia. In America, Valentine Mott (1783-1863), Alexander H. Stevens (1789-1869), Willard Parker (1800-1884), John C. Warren (1778-1856), Henry J. Bigelow (1818-1890), George McClellan (1796-1847), Daniel Bramard (1812-1866), Gordon Buck (1807-1877), and scores of others stamped American surgery with the impress of an ingenuity and resourcefulness surpassing that of the old world. But a few years before the beginning of our period, Horatio Gates Jameson had resected the superior maxilla with a dissection demanding not only an intricate and detailed knowledge of anatomy, but also indomitable patience and courage. Somewhat later, George McClellan of Philadelphia, the founder of Jefferson Medical School, proved the practicability of removing the parotid, performing this operation eleven times. John Kearney Rodgers of New York had successfully wired an ununited fracture, ante-dating all attempts to insure union by immediate fixation of the fragments, and Benjamin Dudley of Kentucky had opened the skull for traumatic epilepsy with unprecedented success.

The story of anesthesia, with the commanding figures of Long, Morton, and Jackson is familiar to all. That tense drama enacted in the Massachusetts General Hospital on the memorable sixteenth of October, 1846, has scarcely been equalled in human experience. Because of the excessive mortality due to shock and sepsis surgical operations were not numerous. With but rare exceptions, they were undertaken only when absolutely necessary and as procedures of last resort. Up to the time of Warren's operation upon

Gilbert Abbott, the average number of operations performed in the Massachusetts General Hospital was but three per month. Warren's patient, fortunately, survived, and the civilized world, as fast as communication could carry the news, learned of this startling demonstration. But anesthesia, while obliterating the pain incident to the operation, was all too frequently followed by the horrors, the pain, and the prolonged suffering incident to sepsis until the emaciated, fever-racked patient welcomed death. Erysipelas, tetanus, gangrene, septicæmia, and pyæmia stalked the surgeon as menacing shadows, and yet again, a third of a century later, slower in development, tardy of acceptance, lacking the colorful setting of the birth of anesthesia, came Lister's perfect demonstration of Pasteur's doctrine—the role of fermentation in wound infection. These two discoveries—anesthesia and antiseptics—stand as the brightest stars in the surgical firmament. Warren and the group in his operating room courageously demonstrated anesthesia, Lister demonstrated the basic discovery of Pasteur, but he supplied the bridge of essential ideas, thus evolving a true discovery.

In 1867, Lister published in the *Lancet* a paper entitled "On the Antiseptic Principle Involved in the Practice of Surgery." Few surgical innovations of permanent value have ever been received with so much skepticism.<sup>1</sup> The reports that emanated from his clinic constituted Lister's irrefutable answer, excision of the knee joint, wiring a fractured patella, the management of compound fractures, positive proof of wound healing by first intention, all proceeding to recovery without fever and without pus. Sydney Smith, founder and first editor of the *Edinburgh Review*, says "He is not the inventor who first says the thing, but he who says it so long and loud and clearly that he compels mankind to hear him." In spite of Lister's continued reiteration of his principles, medical and lay literature for a generation furnished evidences of a strong and powerful opposition. In his centennial resume of American surgery (1876), Samuel D. Gross (whose pioneer work on pathology has been too much neglected) says "The treatment of wounds and injuries has been greatly simplified during the last fifty years. The importance of rest and of the prevention of pain in these and other lesions is universally recognized. Little, if any, faith is placed by an

enlightened or experienced surgeon on this side of the Atlantic in the so-called carbolic acid treatment of Professor Lister." It was not until the early eighties that von Bergmann and Schimmelbusch and others replaced chemical sterilization with the beginnings of the present day aseptic technique.

In the meantime, the pathology of Rokitsansky and Virchow based upon the earlier work of Morgagni and Bichat had opened the door to new concepts of disease. Koelliker had published his treatise on histology (1852) and von Graefe was beginning his outstanding career in ophthalmology, pathology, and surgery. By 1860, Darwin had published his *Origin of Species*, and in 1861 reports of Pasteur's discoveries in bacteriology began to appear. Laboratories of physiology and pathology were springing up throughout the civilized world. Carl Ludwig and DuBois-Reymond in Germany, Gaskell and later Michael Foster in England, and Claude Bernard in France led the physiological group, while Virchow alone held the throne of pathology. By 1870, bacteriology was firmly established, and by the early eighties numerous bacteriological discoveries had been announced. Marked surgical progress had to wait for the knowledge of the true nature of wound infection and a clearer comprehension of normal and pathological physiology. With this was born the new surgery—not the surgery of boldness or of speed or of last resort, but the surgery of the growing knowledge of disease processes. Billroth and Mikulicz Radecki, Czerny, Thiersch, von Volkmann, and von Esmarch were accomplished operating surgeons before the dawn of antiseptics. Their greatest surgical achievements, however, followed this era. In England, Sir James Paget was the outstanding figure, while in America William W. Keen, Christian Fenger, Nicholas Senn, and scores of others, grasping the opportunity afforded by asepsis, forged new surgical links with life-saving procedures.

Based upon new contributions to the physiology of the central nervous system, surgery of the brain and spinal cord—regions which had well nigh defied the slightest surgical interference—now became fertile fields for investigation. Through the work of Victor Horsley and Sir William MacEwen and the later brilliant researches of Harvey Cushing and Frazier and their pupils, neurological surgery has attained a high degree of excellence. The surgery of bones and joints, surgery of the female pelvis, surgery of the genito-urinary tract, and thoracic surgery, have all mounted from the most elementary plane to what a generation ago would have been considered as impossible

<sup>1</sup> It is curious to note what trivial factors may influence sweeping and beneficent improvements. In 1839–40 the chief nurse in Dr. Halsted's operating room in Baltimore complained that the solutions used irritated the skin of the hands and forearms of the nurses. Inasmuch as the chief nurse was later to become Mrs. Halsted, this would never do and the thin protecting rubber glove was promptly devised. At first used incidentally now a definite link in the surgical technique chain the world over.



heights. Advances during the past generation have been aided incalculably by the discovery on November 8 1893, of the X ray. Conrad Wilhelm Roentgen thus opened an avenue to accuracy in diagnosis quite equal in importance to the discoveries of Laennec and Auenbrugger. In this discovery, electrophysics illumined new and unexplored pathways and made possible investigations into fields hitherto forbidden.

This history of progress in surgery during the century may be written after you have consulted the shelves of your library. It cannot be written, however, merely from the perusal of the accounts of the surgical procedures themselves but must be considered step by step in the light of the fundamental sciences of physiology, pathology, anatomy, bacteriology, et cetera, hence its development naturally follows in slightly retarded parallel the advances in these sciences. As new light is shed by experimental physiology and pathology, surgery of the thyroid, of the gastric pouch, and of the gall bladder brilliant as they are today, will become more brilliant and there will be added the surgery of the regions of the body now extra-territorial. Lister's discovery was not that of the cloistered individual working alone in his laboratory. It was a discovery of the correlating type of mind which summoned to its use every atom of available knowledge that appeared to have any bearing upon its original concept. How much Pasteur may have been influenced by Spallanzani or Lister by Pasteur, no one can say, but it is certain that he who is to make the next discovery must bring to his aid the multitude of earlier observations—too often isolated—bearing upon his problem.

It is a far cry from the surgery of J. Kearney Rodgers and Valentine Mott, of Samuel D. Gross and others to the present perfection attainable in the hospital surgical clinic, organized with trained nurses, assistants, and with greatly improved equipment, where operations proceed in every detail with clock-like precision. Attacks upon pathology now yield to the unerring accuracy of knowledge and organization. In the early eighties Sir John Erichsen (1818-1896) of London stated in a public address that "surgery had reached its limits," a statement which he himself must have recalled with chagrin for before his death he was to become cognizant of progress that utterly revolutionized the surgery of his period of active labor. With scores of laboratories peopled with earnest workers, the prophecy may confidently be made that world surgery has but begun its beneficent rôle in human welfare. Today no surgeon worthy of the name is merely an operating expert, he is an experimental physiologist, an experimental pathologist and many of the problems which appear today to be primarily surgical may prove with new knowledge from the laboratories to be biochemical or biophysical. Furthermore equally startling advancements in surgery may come from the laboratories of physics and chemistry, yielding new methods, new agencies and new disease concepts.

Surgical progress is an ever extending line of force, the true resultant of numberless forces all fusing and coalescing at varying angles into a forward driving power. And so may we say that the centuries of speculation enshrouded in the mist and mold of superstition made way thus early for an era of progress born of experiment.

# COLLECTIVE REVIEW

## ACUTE HÆMATOGENOUS OSTEOMYELITIS OF ADOLESCENCE

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AMONG the diseases usually assigned to the practice of general surgery there is probably none in which the pathology is so well understood and an early diagnosis so infrequently made as the acute hæmatogenous osteomyelitis of adolescence. There are surgeons of fairly wide experience who can truthfully make the statement that they have never seen the disease in its really acute stage. This is due, on the one hand, to the fact that, though the condition is surgical, cases presenting it do not usually come originally to the surgeon but are seen first by the internist or general practitioner who, not infrequently, treats them for some other condition, especially acute articular rheumatism during the acute stage of the disease, and allows them to be referred to the surgeon only when the subsequent course of events has indicated the mistake in diagnosis. On the other hand, not only is the internist or general practitioner prone to misdiagnose the condition, but the surgeon also often fails to recognize it in the early stage, in which it is amenable to treatment, and temporizes at least to the extent of jeopardizing the patient's chances for complete recovery. These two considerations—first, the fact that the surgical specialist seldom sees the patient initially, and second, that the diagnosis is relatively difficult for even the specialist to make, are excuse enough for a frequent repetition of the essential facts concerning the disease as they are at present understood in order that the condition may be kept fresh in the minds of all who may be called upon to diagnose and treat it.

### DEFINITION

The acute hæmatogenous osteomyelitis of adolescence may be defined as a rapidly developing osseous inflammation originating as a local infection of the bone marrow in the course of a blood-borne bacterial invasion and characterized by a tendency to spread rapidly, to involve all of the structures of the bone in an extensive necrosis, to produce a profound systemic toxæmia, and

either to overwhelm the patient rapidly or, becoming chronic, to exhaust the patient with its complications and sequelæ. Another, and more succinct definition, describes it as 'a pyæmia which metastasises in bone'.

### ETIOLOGY

#### *Age and sex incidence*

Acute hæmatogenous osteomyelitis is a disease primarily of childhood and early adolescence which affects boys somewhat more frequently than girls. In a series of cases reported by Farr (5) there were 58 boys and 40 girls, in a series reported by Pfeiffer (14), 14 boys and 11 girls, and in a series reported by Doran and Brown (3), 44 boys and 27 girls. Kennon (8) has tersely described its maximal age and sex incidence in his use of the term "school boys' disease." The reason for the particular prevalence of the condition among boys may be sought in the fact that boys are doubtless less cleanly than girls and more subject to cuts, bruises, abrasions, acne, furunculosis, and exposure to cold and wet. From a consideration of the pathological changes, which will subsequently be described, it would appear that the typical lesion may occur at any time in life from birth up to the age of fusion of the epiphysis with the diaphysis. Caldwell (2) gives five and fifteen years as the characteristic extremes. Maes (10) considers the typical age incidence as between two and eighteen years, and Speed (16), in reviewing a series of 131 cases of what he calls "diffuse" osteomyelitis (the usual form) said that 70 per cent of the cases occur between the ages of eight and fourteen years.

#### *Bacteriology*

It may be stated in a general way that any of the pus-producing organisms may initiate the typical lesion of osteomyelitis. The staphylococcus, particularly the staphylococcus aureus, is by far the most typical and important microorganism and produces the lesion in its most acute and

characteristic form. The streptococcus is also an important causative agent, but by no means as frequent an invader as the staphylococcus, however, it runs the staphylococcus group a very close second as far as virulence is concerned. Relatively unimportant invaders are the pneumococcus, the influenza bacillus, the bacillus typhosus, and the bacillus paratyphosus.

In a recent study of cultures from 43 cases, Farr (5) found the incidence of the various organisms as follows: staphylococcus aureus, 26 cases, staphylococcus combined with streptococcus, 5 cases, staphylococcus albus, 4 cases, streptococcus alone, 2 cases, pneumococcus, 2 cases and a combination of streptococcus, staphylococcus, and diphtheroid organisms, 1 case. In 4 cases the cultures were sterile, and in 4 cases positive blood cultures were obtained.

The important foci of infection from which the organisms are derived, in the case of the staphylococci, are apparently lesions of the external body surfaces, such as furuncles, patches of impetigo, septic cuts, and abrasions, and the umbilical sepsis of the newborn. In cases in which the streptococci can be incriminated, their derivation can often be traced to the tonsillar crypts, infected sinuses, and otitis media. The gastro-intestinal tract below the oesophagus, specifically Peyer's patches, has been repeatedly implicated as a focus of infection. Measles, scarlatina and variola may likewise cause the fundamental pathological changes to which osteomyelitis is secondary. It must be emphasized, however, that not infrequently the portal of entrance of bacteria is of microscopic size and that such a portal of entry may not manifest the usual signs of inflammation by which it may be recognized clinically.

The occurrence of trauma is not considered of particular etiological significance in the localization of the lesion. Certainly such experimental data as are at present available fail to corroborate such a hypothesis and Farr (5) has recently urged against the view the following observations:

1. There is a history of trauma in only about a third of the cases.

2. In cases in which there is a history of injury the latter is usually trivial so trivial, in fact, as to have left no evidence of its presence at the time the patient comes under observation.

3. The infection characteristically starts in a part of the bone which is naturally well protected against the effects of trauma.

4. Osteomyelitis is rare in cases of simple fracture in which conditions are ideal for its development. Moreover, in children in whom

the disease occurs characteristically, the separation of epiphyses, virtually at the site of election of the lesion, is by no means commonly associated with its development.

5. Trauma in analogous pyæmic abscess formation, as in abscess of the lungs, liver, and kidneys, is not considered of particular etiological significance.

Probably the truth with respect to the importance of trauma in osteomyelitis is that minor trauma simply attracts attention to a lesion already becoming established, as is believed to be frequently the case in various other abnormal processes such as the development of carcinomatous nodules in the female breast.

#### ANATOMY

##### *Diaphysis, epiphysis, metaphysis*

A good many years ago, Lever showed that the nutrient artery supplying long bones characteristically enters the shaft of the bone at its diaphysis, in its mid portion, and soon thereafter subdivides into 2 branches, one going to either end of the bone. The latter divide and subdivide until ultimately they end in fine capillaries about the epiphyseal end of the shaft which is known as the metaphysis. That the metaphysis is anatomically distinct from the diaphysis and also from the epiphysis has been emphasized by Tiller (17), who has made the observation that not infrequently, especially in the adolescent, the metaphysis is marked off from the diaphysis proper by definite lamellæ of bone which can be demonstrated both skiagraphically and by dissection.

#### PATHOLOGY

The infection, which, as has been stated is dependent upon a pre-existing bacteræmia, arises characteristically in the metaphysis of the bone and goes through the processes of inflammation, congestion, exudation, infiltration, death of tissue, suppuration, sloughing, sequestration, and healing. In the development of this sequence, destruction of tissue occurs in the path of least resistance. This may sometimes mean the invasion of the bone marrow in a retrograde manner, but usually involves extension of the process by way of the haversian canals to the surface of the cortex of the bone. At this point it meets the resistance of the periosteum, which it lifts and under which it burrows for a varying distance. In the absence of surgical treatment, the pus and necrotic material sooner or later erode and burst the periosteum and infiltrate still further along tissue planes, eventually penetrating to the

exterior through the skin after extensive damage to the structures through which the destructive process has made its way. It should be noted in this connection that osteomyelitis, except in exceedingly rare instances, never begins in the epiphysis of the bone, and the designation "epiphysitis" cannot be used as descriptive of the lesion. Furthermore, although inflammation of the periosteum invariably occurs in connection with the lesion, the term "periostitis" does not describe the essential features of the pathological change, and its use as descriptive of the process should be avoided.

The mechanism of the incipience of osteomyelitis has been by no means settled. That a bacteremia may occur in an otherwise fairly healthy person and that this process may succumb to natural processes of immunity without proceeding to active mischief is doubtless beyond question. On the other hand, when bacteria are artificially introduced into experimental animals, they may or may not produce pathological changes which include osteomyelitis as one of their component parts. In this connection the experiments of Lexer are in point. Lexer found that when large numbers of virulent bacteria were introduced into the blood stream, death from toxemia occurred within twenty-four hours, and this in the absence of abscess formation. On the other hand, less virulent and less concentrated suspensions of bacteria introduced in the same manner showed a tendency to produce abscesses in various tissues, and abscess formation was more apt to occur in the bone marrow, the less virulent and the less concentrated the suspension of bacteria. Two slightly different mechanisms have been proposed as explaining the reason for the localization of the process of osteomyelitis in the metaphysis rather than elsewhere.

The first hypothesis is based on the assumption that the process is essentially one of thromboarteritis or thrombophlebitis. According to this theory, minute conglomerations of organisms which are able readily to pass through the relatively large capillaries of the lung or the brain cannot pass through the narrow, tortuous and inelastic capillaries of the metaphysis. This is the theory most commonly advanced and the one which is probably most generally accepted.

The second theory is based on experimental data. Assuming that bacteria as such, are responsible for the initiation of the lesions of osteomyelitis, Robertson (15) and various others before him reported that when bacteria in suspension are introduced into the blood stream of experimental animals the organisms can be dem-

onstrated for some hours thereafter almost equally distributed throughout the extent of the medulla of the bones. During this period the metaphysis, which according to the preceding theory, might be expected to contain the largest number of organisms actually contains relatively few. A number of hours later, however, the opposite condition prevails the central part of the diaphysis being then relatively free and the metaphysis containing conglomerated clumps of bacteria in relatively large numbers. The theory which has been advanced to explain these experimental data is that, in the shaft of the bone, in which the movement of the blood stream is fairly rapid and oxygenation is also adequate, phagocytosis can take place effectively whereas in the diaphysis venous drainage is so slow and oxygenation so inadequate as to allow the multiplication of organisms necessary to produce the initiation of an acute osteomyelitic process at this point. This theory is an interesting one and at least has a background of experimental evidence in its favor.

Uffreduzzi (18) has observed that the location of an infection in bone corresponds to the area of most active growth and consequently to the area of greatest blood supply. As in infancy, growth is most active at the epiphysis, epiphysitis is more apt to occur during this age period, whereas from five years on to adolescence the greatest developmental activity is located about the metaphysis and the usual form of osteomyelitis is accordingly characteristic of this age period. Uffreduzzi further affirms that the characteristic points of development are found in such bones and in the particular end of such bones as are undergoing most active growth statements which are interesting but are not however in all probability, altogether according to the facts.

#### SYMPTOMATOLOGY

The symptoms in hematogenous osteomyelitis are variable. A typical history has been described which can be considered classical and yet the variations from type are so numerous that it is impossible to maintain the contention so frequently expressed that a diagnosis of osteomyelitis can be made merely on the basis of the history and in the absence of a physical examination, as for instance, over the telephone. The variation from type has perhaps been too little emphasized and has undoubtedly given rise to many mistakes in diagnosis. An analogy between hematogenous osteomyelitis and acute appendicitis in this respect has been frequently cited. In the typical case both conditions present a history which is diagnostic and which excludes

other conditions almost entirely. On the other hand both may at times have variations in history and physical findings so protean as to tax the diagnostic power of the most skillful.

#### *Typical symptoms of a case of moderate severity*

In a case of typical osteomyelitis of moderate severity, the patient, who is a child, usually a boy of school age, presents the usual evidences of toxæmia, especially the occurrence of chills and fever. The fever usually ranges from 103 to 104 degrees F. This much of the syndrome must be considered as essential, both on the basis of a consideration of the pathological changes involved and on the basis of clinical experience in the diagnosis of the condition. In addition to the chills and fever, other constitutional signs of the toxæmia may be manifest such as vomiting, dryness of the tongue, headache, rapid pulse, and prostration. Locally, the symptoms are those of a circumscribed inflammatory process consisting at the outset of acute and persistent localized pain in the region of a joint, that is to say, over the metaphysis of a bone. The pain is near the joint but not in it, as can be demonstrated by the fact that the joint surfaces may be moved painlessly over each other when the limb is properly supported and the manipulation is performed with gentleness. The character of the pain is described by Kennon (8) as 'one finger rheumatism'. The pain is severe and sticking, and almost invariably the patient can set a definite time at which it commenced. As the pain is incompatible with sleep, patients in whom it developed during sleep will give a history of having been awakened and will often know the exact hour at which it occurred. Those who are stricken during the day time will not infrequently be able to give exact details as to the hour, the place, and the nature of the activity in which they were engaged at the time of onset of the symptoms.

The blood picture constantly shows a leucocytosis. Maes (10) says that from 20,000 to 30,000 white cells is a characteristic finding. Hupp (7) places the extreme at from 25,000 to 40,000 and Farr (5) at from 10,000 to 60,000 with an average of 30,000. The leucocytosis is a polymorphonuclear leucocytosis. Farr (5) places the incidence of polymorphonuclear leucocytes at 80 per cent.

Radiologic findings may never be relied upon to substantiate the diagnosis of acute osteomyelitis. The taking of a skiagram within the first forty-eight hours of an attack is futile because at this stage of development of the condition the bone changes have not progressed to such a point as

to influence the radiopacity of the bone and surrounding structures.

In cases in which a diagnosis has been unduly delayed, that is, beyond forty-eight hours, various late signs may occur, such as local tenderness, local redness, and even, at times, fluctuation. The most frequent point of tenderness in the acute stage may be sought as follows:

In the case of the tibia, palpate at the lower end of the bone the posterior aspect just above the epiphyseal line, and at the upper end of the bone the antero-internal aspect just below the epiphyseal line. In the case of the femur, palpate at the lower end of the bone the posterior aspect just above the epiphyseal line, and at the upper end of the bone the antero-internal aspect of the neck of the femur. In the case of the humerus, palpate, for the lower end, the posterior surface just above the epiphyseal line and for the upper end the antero-internal aspect of the neck of the bone. In the case of the upper end of the ulna, palpate the posterior surface and in the case of the radius, the anterior surface of the lower end just above the epiphyseal line.

#### *Distribution of lesions*

The characteristic distribution of lesions in osteomyelitis—that is, the percentage distribution of the lesion with respect to the various bones—is important because in this condition, as in various other diseases, the factor of probability may frequently mean the difference between a correct and an incorrect diagnosis.

In 160 cases Speed (16) found the tibia involved in 40 per cent, the femur in 35 per cent, the humerus in 7 per cent, the radius and ulna in 7 per cent, the fibula in 2 per cent, and 2 or more of the bones simultaneously in 16 per cent. Gibson (6) found that of 50 cases 44 showed the infection in the lower extremity. Pearson (12) gives the following order of frequency with respect to the occurrence of the lesions of osteomyelitis: (1) lower end of femur, (2) upper end of tibia, (3) lower end of tibia, and (4) upper end of humerus. Lesions were also found affecting the radius, clavicle, and ilium. Farr (5) reports the following distribution: femur, 40 cases, tibia, 14, mandible 11, multiple foci 10, humerus 9, tibia 5, radius 5, rib 5, cranium, 4, os calcis, 4, metacarpals 4, fibula 3, ulna, 2, scapula, 1, and clavicle 1.

#### *Variations from type*

With reference to the various aberrant types which may occur in osteomyelitis, one can scarcely do better than refer to the classification of Farr

(5), who describes 4 types, of which the most common variety is the third

1 *The fulminating type* In this type the patient is overwhelmed by the toxæmia from the onset and usually dies, in spite of treatment, at about the time of appearance of the first localizing signs

2 *The severe acute type* This type is characterized by high temperature, profound prostration, and slight but definite localizing signs The patient's resistance is sufficient if the diagnosis is made promptly and the proper treatment is instituted immediately, but if proper treatment is not given at once death usually ensues rapidly

3 *Ordinary acute case* In the ordinary acute case the temperature is 102 degrees F or thereabouts, the pulse is moderately rapid, the prostration is only slight, and the local reaction is mild

4 *Mild cases* In cases of a mild type the systemic reaction is minimal and the localizing signs are moderate

With respect to variations from type it should be noted that unusual localization of osteomyelitis, such as in the bones of the pelvis may lead to mistakes in diagnosis Therefore the aim of the diagnostician should be to keep the unusual manifestations of the disease in mind to such an extent that mistakes in diagnosis will be minimal Several observers have called attention to the difficulty involved in diagnosing osteomyelitis of the ilium and the ease with which this condition may be mistaken for peritonitis due to abdominal disease or for acute hip joint disease Localization of an osteomyelitic process in the ilium is not very rare It occurred 7 times in 540 cases of osteomyelitis reported from the Children's Hospital in Boston by Peerebans (13), and Bearse (1) has suggested that it should be considered in connection with any painful hip that permits motion

#### DIAGNOSIS

As has been previously emphasized, the diagnosis of acute osteomyelitis is too frequently missed Pearson (12) has voiced the opinion that there is "no single disease that is a greater reproach to the medical profession," and Hupp (7) says that "more sins of omission and commission occur in connection with osteomyelitis than in all the frequent diseases in surgery" Mistakes in the diagnosis of acute osteomyelitis are made usually as the result of an oversight They can hardly be made if the condition is constantly borne in mind as a possibility In children, an acute persistent pain occurring near but not in a joint and accompanied by a fairly well marked constitu-

tional reaction should suggest osteomyelitis to both the surgeon and the general practitioner unless this condition can be definitely excluded Acute cases are characteristically misdiagnosed either as acute rheumatic fever or acute arthritis However, if they are seen after the lapse of hours or several days, at which time signs of local inflammation may be present, a diagnosis of simple abscess or phlegmon may be made As the result of thoughtlessness, certain cases belonging to the class which show profound toxæmia may be treated for typhoid fever, acute generalized miliary tuberculosis, or certain other prostrating conditions

As to the differential diagnosis of cases of osteomyelitis, the following facts should be borne in mind

1 Osteomyelitis is a disease which occurs characteristically in older children and early adolescents, whereas acute hæmatogenous arthritis is characteristically a disease of babies and very young children, and rheumatic fever affects older adolescents and young adults

2 Acute hæmatogenous osteomyelitis occurs near but not in the joint, whereas acute rheumatic arthritis and acute hæmatogenous arthritis occur as joint affections

3 In arthritis joint motion cannot be tolerated, whereas in osteomyelitis passive movement of the joint near the site of the lesion is relatively painless provided it is instituted with extreme gentleness

4 'Cases of osteomyelitis typically manifest the phenomenon of retarded bone tenderness' (Pearson) In other words continued gentle pressure over the shaft of the affected bone at a distance from the site of the lesion causes sudden acute pain over the involved area

5 Local applications over the lesions of acute rheumatic arthritis and anodynes administered by mouth in such cases are productive of much more relief than occurs when osteomyelitis is similarly treated Furthermore, there is a marked tendency for the multiplication of lesions in rheumatic arthritis, there may be indications that one joint is recovering while another is becoming involved

#### PROGNOSIS

If the diagnosis is made sufficiently early and the proper treatment is then instituted, the mortality in osteomyelitis should be nil The convalescence should be no different from that after an abscess of the soft parts, and there should be no necessity for a secondary surgical intervention However, if operation is delayed and the

condition becomes chronic, its treatment will require a serious mutilating operation, usually a series of such operations, and there will be a period of invalidism which may last for many years, possibly the rest of the patient's life.

Chronic osteomyelitis with its own peculiar pathological changes and its own indications for treatment constitutes a separate chapter in surgery.

#### TREATMENT

*Prophylactic treatment* The pathogenesis of the disease which incriminates foci of infection should put the practitioner of medicine on guard in cases of acne vulgaris, chronic infection of the tonsils, chronic intestinal infection, and various other local infections. Patients at the osteomyelitic age who present such lesions should be encouraged to eradicate possible foci of systemic infection and should be discouraged from participating in a too active life since in certain cases repeated trauma possibly stands in a causal relation to the development of the condition.

*Surgical treatment* The condition of osteomyelitis is as essentially surgical as acute appendicitis except that, whereas the average case of acute appendicitis tends to become quiescent, the case of acute osteomyelitis never becomes quiescent, but, on the contrary, tends to become fulminant and to jeopardize life.

The operative treatment of the condition must always be considered an emergency procedure in which minutes count and a delay of hours may mean the difference between life and death. It should be emphasized that an operation performed at the earliest possible moment in the cases even if performed by unskillful hands, is undoubtedly to be preferred to any considerable delay provided the operative procedure is rational.

1 *Systemic treatment* Although operative treatment, which is local, is the treatment *par excellence* for osteomyelitis, the general supportive treatment, including the application of heat to the body surfaces, and even blood transfusion in very fulminant cases must be recognized as an important factor which may turn the tide either in favor of or against the patient.

2 *Local treatment* The indication in local treatment is for adequate drainage of the focus of infection combined with immobilization of the affected parts and the prevention of added trauma. The osteomyelitic process is essentially an abscess of bone. Just as in abscess of soft parts drainage must be instituted early and thoroughly. Other things being equal, one who under-

takes the treatment of a case of acute osteomyelitis may be forgiven if his treatment is a little too radical but may not be forgiven if his treatment is insufficient. Most surgeons advocate, as the minimum, incision through the skin in the proper muscular interspace, directly through the soft tissues and periosteum, with the establishment of drainage by the production of multiple small drill holes in the substance of the metaphysis.

In cases seen and diagnosed early and treated by the method just described the uninitiated may be led to believe temporarily that a mistake in diagnosis has been made because when the cortex of the bone is opened, no pus is discovered. Possibly there may be a small dribble of liquefied fat from the drill holes, but in some cases no exudation at all may be noticed. However a free drainage of pus will be established within from twelve to twenty four hours and the correctness of the diagnosis thus proved. Certain authorities, notably Lewis, have stated that, if pus is located beneath the periosteum, a simple incision through the periosteum without entering the bone is sufficient, that such a procedure will relieve the tension of pus below the periosteum, will, in fact, relieve the toxæmia from which the patient may be suffering and will not be incompatible with a subsequently more radical procedure in case such a procedure may be deemed advisable. With this view the majority of surgeons are in disagreement. As in virtually all cases the lesion is situated deep in the bone, the added trauma incident to the establishment of drainage by multiple drill holes is insignificant in comparison with the relief derived from adequate drainage. Mallet and chisel, which cause more trauma than a drill should be used only when a drill is not available.

The teaching of Cohn (3) is most rational. Cohn says "The bone should be approached by the most direct route without doing damage to important structures. Where possible, approach in the intermuscular planes is preferred. If one finds pus under the periosteum he should not stop but proceed to open the medullary canal, as the infection has reached the cortex, through the haversian system and is primarily within the canal." In making the incision for the establishment of drainage, areas in the region of large blood vessels should be avoided because of the danger that the subsequent infection may cause erosion of the vessels and unnecessary hæmorrhage may result. Care should be taken also to avoid the epiphyseal line, since the subsequent growth of the bone depends upon the integrity of this area.

There is a fairly general consensus of opinion that the use of the curette or any other similar instrument within the marrow cavity is definitely contra-indicated in the treatment of acute osteomyelitis for the same reason that it is contra-indicated in phlegmon elsewhere in the body. The usual teaching is to pack the wound open following operative intervention, but to avoid the use of rubber drains.

**Postoperative treatment** Most authorities are agreed that the principal postoperative indications are first, supportive measures, second, rest, both general and local, and third, general hygienic measures. Orr (11) has recently advocated extreme rest. After promoting free drainage by cutting down upon the affected bone area, retracting the skin edges, together with the muscles, fascia, and periosteum, chiselling a window into the affected bone area so as to remove all of the affected bone and to leave no overhanging edge, cleaning out the diseased bone gently, either with a gouge or curette, wiping the wound thoroughly with 10 per cent iodine followed by 95 per cent alcohol, packing the wound wide open with sterile moist gauze packs, and covering with a dry sterile pad well bandaged on, he performs any reasonable forcible manipulation that is necessary to obtain correct anatomical position of the parts for splinting and then places the affected member preferably in a plaster cast although in some cases he uses ice tongs. The wound thus dressed is left undisturbed until re-dressing becomes absolutely necessary, as indicated by a rise in the temperature, other signs of acute sepsis, or an unbearable odor. As a rule Orr dresses his patients at intervals of from ten days to four weeks, the indication for the dressing being usually the character of the odor. His teaching is perhaps a little too radical in respect to both the method of opening the bone and the extreme rest. Probably most men will prefer to modify such treatment in accordance with the principles discussed. Lewis (9) advocates draining a subperiosteal abscess without cutting the bone. If the condition of the patient does not improve or if there is definite evidence of a suppurative process in the cortex of the bone, he later opens the marrow cavity. This treatment seems irrational as only slight additional trauma is inflicted by the drilling of multiple holes in the metaphysis of the bone and if such a procedure is indicated at all, it certainly is indicated at the time of the institution of the original operative procedure and not after further progress of the symptoms with consequent added toxæmia has jeopardized the patient's chances of recovery. Chatterton favors

aiding drainage with moist dressings saturated with normal saline solution or boric acid, but advises that such applications be stopped short of skin maceration. He adds that Dakin's method of irrigation or tidal wave irrigation with various antiseptics may be used to advantage. The application of moist dressings may be beneficial, but the use of antiseptics is probably rarely necessary in acute cases.

#### CONCLUSION

1 Acute osteomyelitis is a surgical emergency as acute as any emergency known to surgery. Minutes count in getting the patient to a place where he can be operated upon.

2 General practitioners usually see cases of osteomyelitis first, and upon them, therefore, usually rests the responsibility of early diagnosis. Since mistakes in diagnosis usually arise from the practitioner's failure to think of the possibility of the condition, its essential features should frequently be brought to the attention of the profession at large.

3 If, in a given case, there is doubt as to whether operation should be performed or not, a safe rule to follow is, to paraphrase an aphorism coined with respect to drainage in abdominal surgery, "when in doubt, operate."

4 The skiagram is of merely negative value in early diagnosis.

5 Mere opening of the periosteum after the superficial tissues have been cut through is probably never enough. Whether pus is found or not, multiple drill holes should be cut into the cortex over the metaphysis, and even then the absence of frank pus does not necessarily mean a mistake in diagnosis if the case is an early one.

6 In osteomyelitis of the neck of the femur (hip joint arthritis), the complication of suppurative arthritis is the rule because of the anatomical peculiarity of this articulation, the epiphysis being included entirely within the joint capsule.

7 It is far better to perform the operation for osteomyelitis under unfavorable conditions than to risk any considerable delay incident to transportation of the patient to a distance with consequent loss of a number of hours of valuable time.

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# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Murard, J. Primary Osteomyelitis of the Frontal Bone (Ostéomyélite primitive du frontal) *Bull. et mém. Soc. nat. de chir.*, 1929, 14, 1400

A boy seven years of age was brought to Murard for treatment for exophthalmos on the left side of twelve days' duration. An abscess found in the upper part of the orbit was drained. The pus contained staphylococcus albus in pure culture. At first, improvement in the child's condition was noted, but a week later it was necessary to open a small collection of pus on the inner part of the orbit. Although the incision healed promptly, the temperature continued to rise. A search for a lesion of the frontal sinus was negative, and there were no symptoms pointing to the ethmoid. However, pain on percussion was noted before long in the frontal bone at the level of the left frontal ridge, and twenty-four days after the first operation slight edema became apparent in this region and quickly increased. Three days later, i.e., twenty-seven days after the first operation, the frontal region was widely incised. The bone was found denuded and roughened by osteomyelitis. The external table was resected over an area the size of the palm of a child's hand. The osteomyelitic process had not invaded the inner table. When the superior border of the orbit was incised and the contents of the orbit were depressed, a zone of osteomyelitis was discovered in the roof of the orbit. This was cleaned out as thoroughly as possible with the gouge. Wick drainage was established. Sixteen days later a sequestrum the size of a 5 franc piece was removed from the frontal bone. Beneath it a cystic cavity containing half a liqueur glass full of a syrupy fluid was discovered. The floor of this cavity showed the ostium of a fistula from which a little pus escaped when the child cried or coughed. No attempt was made to open the fistula.

After the removal of the sequestrum the child's condition improved. While the left eye remained depressed, sight was unimpaired and movements of the eyeball were not limited. One year after apparently complete cure the suppuration in the frontal region recurred, and the child died of meningitis.

The author discusses whether extensive resection of the frontal bone should have been done at once and whether the attempt to save the eyeball was justified. He points out the difficulties of resection of the frontal bone. He believes that saving the eye was justifiable under the circumstances as the frontal origin of the disease was at first only hypothetical.

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### EAR

Reuben, M. S. Otitic Complications. *Arch. Pediat.*, 1930, 47, 83

Complications and sequelae of otitis media in children are discussed from the clinical point of view. The complications considered are mastoiditis, sinus thrombosis, labyrinthitis, meningitis, and abscesses of the brain. The anatomical conditions peculiar to infants are described and the necessity for close cooperation between the pediatrician and otologist is emphasized.

Acute purulent otitis media in infants is usually due to decomposition of amniotic fluid in the eustachian tube and middle ear. The local signs are frequently masked by the general symptoms. A relationship between ear infections and severe nutritional disturbances has been demonstrated.

The opinion is advanced that all cases of mastoiditis are essentially surgical. The suggestive symptoms of mastoiditis are discussed in detail. Immediate surgery is indicated by symptoms of intracranial involvement, suppurative labyrinthitis, and facial paralysis. The appearance of polypi in the middle ear and an acute mastoiditis superimposed on a chronic otitis media also call for operative interference.

The symptoms of sinus thrombosis are local and general. The systemic manifestations include fever, chills, or chilli sensations, headache, metastatic signs, changes in the fundi, myalgia, and arthritic symptoms, pustules, petechiae, and a positive blood culture. Among the local signs are swelling behind the mastoid, enlargement of the glands at the angle of the jaw, pain along the back of the neck, abscesses of soft parts in the vicinity of a venous radicle, and a painful strand in the neck along the jugular vein.

Enlarged glands should not be considered the cause of prolonged fever unless they suppurate. A search should be made for the offending focus. The author lists twenty causes of persistent elevation of the temperature after mastoidectomy.

Meningeal symptoms may appear at the onset of mastoiditis and disappear after mastoidectomy. A prognosis in cases of meningitis sympathetica is always hazardous. Meningitis is indicated by a continuous high temperature, headache, and irregular attacks of delirium. The general symptoms of meningeal involvement are dependent upon general toxemia, cerebral irritation, and cerebral compression.

Vertigo, nystagmus, and disturbances of equilibrium indicate interference with the vestibular

apparatus. The tests employed to determine the state of the labyrinth are rotation tests, caloric reactions, the fistula test, galvanic tests, past pointing and tests of equilibrium. It is impossible to differentiate clinically between a diffuse serous and a diffuse purulent labyrinthitis.

The end of the article consists of a discussion of intracranial complications and a general review of diagnostic tests. W. M. PATON, M.D.

### MOUTH

Gask, G. E. The Study of the Treatment of Epithelioma of the Tongue by Radium. *Lancet*, 1930 cccviii 223.

The author compares the treatment of epithelioma of the tongue by surgical excision and by radium irradiation. He states that according to statistics the incidence of five year survival is as high after radium treatment as after surgery.

In the treatment of the tumor of the tongue itself radium irradiation presents no difficulties and is to be preferred to surgery because it results in healing without mutilation and leaves the tongue mobile.

The treatment of the lymphatic glands still remains a problem. Some workers advise block dissection on one or both sides, others dissection plus radium irradiation and others radium irradiation alone.

In conclusion the author emphasizes that whatever the method used the treatment must be given early. LAWRENCE CURTIS, M.D.

### PHARYNX

Miller, M. V. The Lingual Tonsil. *Laryngoscope*, 1930 xl 127.

The anatomy of the lingual tonsil is briefly reviewed and the conditions affecting this segment of Waldeyer's ring are discussed in detail. The author emphasizes that a thorough examination of the region requires the use of a laryngeal mirror.

The lingual tonsil may be the site of acute or chronic diseases, hypertrophy, abscesses, lues, tuberculosis, hyperkeratosis, leprosy, neoplasms or foreign bodies. The most frequent condition is hypertrophy. Acute lingual tonsillitis is a clinical entity. The possibility that the lingual tonsil may act as a focus of infection should be borne in mind.

In chronic infection excision of the lingual tonsil is the method of choice, but cauterization is often beneficial. W. M. PATON, M.D.

Clerf, L. H. Pulmonary Abscess Following Tonsillectomy. Bronchoscopic Considerations. *Arch Otolaryngol*, 1930 xi 50.

Carmody, T. E. Pulmonary Abscess Following Tonsillectomy. Laryngological Aspect. *Arch Otolaryngol*, 1930 xi 200.

CLERF states that bronchoscopy should be given a trial in cases of pulmonary abscess as it has been found that benefit results when drainage is improved

by way of the natural channels. He reviews a series of seventy seven cases. In 65 per cent of these the abscess occurred between the ages of twenty and forty years and in seventy three it followed the use of general anesthesia. The involvement was discovered most frequently in the right lung and in the upper lobe. Clerf concludes that bronchoscopic examination is indicated in every case in which there is doubt as to the diagnosis of pulmonary abscess and that it should be done early. It has few contraindications. No definite rules can be formulated as to the length of treatment, cooperation between the internist, roentgenologist, surgeon and bronchoscopist is essential.

CARMODY calls attention to the fact that since the value of the bronchoscope in both diagnosis and treatment has been recognized the literature concerning infection of the lung following operative procedures has increased rapidly. He states that a pulmonary abscess may develop from septic emboli and in other ways depending upon whether the tissues have been injured by chemical or mechanical agents or have undergone chemical changes. A true abscess is caused by the pneumococcus of the viridans or hemolytic type while gangrene is caused by the fusosprochæte. GEORGE R. McCLURE, M.D.

### NECK

Rienhoff, W. T. Jr. The Gross and Microscopic Structure of the Thyroid Gland in Man. *Arch Surg*, 1929 lxx 936.

Previous investigations concerning the structure of the thyroid gland have dealt essentially with the morphology of the individual follicles. War reconstruction studies were made of only very small blocks of tissue too limited to reveal the structure of the gland as a whole. Rienhoff made wax reconstruction models of larger segments of thyroid tissue than those reconstructed by previous investigators. In addition he further studied the morphology of the thyroid gland by means of maceration and microdissection methods. His description of the technique employed commands the greatest admiration for the indefatigable application and the unlimited patience which the completion of this work required. He attempted to establish the grosser structure of the thyroid gland as a whole as well as to study the size, shape and spatial relationships of the individual follicles. Special attention was paid to the question of the existence of interstitial epithelial cells of embryonic or mature types. Parallel studies were made of normal thyroids and glands removed from patients with exophthalmic goiter and the findings compared.

By the employment of special fixation, maceration and microdissection the connective tissue including the blood vessels, nerves and lymphatics, was dissected away from entire lobes of normal thyroid glands. Contrary to all previous descriptions total absence of true lobulation of the thyroid gland was found. The parenchyma of the gland was



Fig 1 Cross section of the normal human thyroid demonstrating the anastomosing channels or spaces forming a fenestrated labyrinth. It is to be noted that the clefts do not completely traverse the gland.

revealed as a complex mass of tissue which is divided and irregularly broken up into many regions or areas composed of groups of follicles. These plates or bars of parenchyma vary enormously in size and shape even in the same gland, but they are all joined to each other at one or more points so that in no case is a portion of parenchyma completely surrounded by connective tissue and isolated from the remainder of the gland. The plates and bars of tissue at the periphery of the lobes tend to be thin and flat, as from pressure from contiguous structures, tapering off to blend with the investing connective tissue. The inner zones are more compact and more complex, and the parenchyma is arranged in large columns or blocks with broad connecting bars. The clefts and crevasses left by the removal of the fibrous tissue septa with their contained blood vessels, nerves, and lymphatics become more tortuous and irregular as they approach the center of the lobe. The thyroids from patients with exophthalmic goiter resembled the normal in structure except that the glands and their various subdivisions were larger.

By further macerating the specimens and carefully dissecting them under the microscope, it was possible to isolate the separate individual follicles. Each follicle is completely invested with a capillary plexus. This plexus may then be removed, leaving the epithelial sac alone and intact. Photographs of isolated follicles are reproduced. The follicles vary considerably in size, in the normal gland ranging from 20 microns to 1 mm in diameter, but the smaller sizes predominate. They vary considerably also in shape, but are roughly spherical. The outside wall is smooth except for facets or cupping, and there are no buds, out-pouchings, or constrictions into secondary sacs. All follicles are completely separate and discontinuous units, none showing branching, junction, or tubular formation. The roundness of the follicles seemed to be due to the contained colloid.

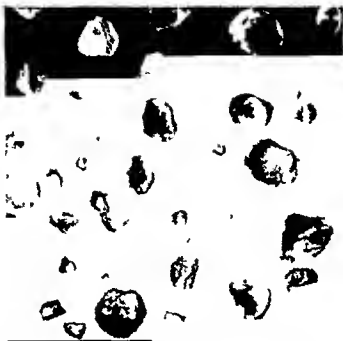


Fig 2 A group of follicles dissected from the normal human thyroid. The spherical shape together with the variability and thickness of the epithelial wall as evidenced by the difference in the photographic shadow cast is well brought out.

Similar dissection of glands from patients with exophthalmic goiter also revealed a great variation in the size and shape of the follicles. On the average, however, the follicles in the gland of exophthalmic goiter are much larger than those in the normal thyroid. The number of large follicles is definitely greater. The walls of the follicles are thicker because of the greater height of the epithelial cells and finger-like projections into the lumen of the sacs can be seen. There is more variation in the shape of the follicles, but the outside surface remains smooth, and budding or out-pouching is definitely not present. The follicles seem to contain much less colloid than those of the normal glands.

Wax reconstructions of normal and exophthalmic goiter thyroids provided casts of the interior of the follicles. Here again the variation in size and shape and the complete isolation of the follicles is seen. In contrast to the smoothness of the outside wall, the internal shape is more irregular, and occasional tubular or branching structures are formed by infoldings or plications of the epithelium. Every epithelial cell seen in the sections was reproduced in the wax models to see if there were interstitial cellular elements. It was found that all epithelial cells are a part of some alveolus, the so-called interstitial cells being merely tangential sections through portions of neighboring follicles. The follicles of the thyroids of exophthalmic goiter are much larger than those of the normal gland, and the irregularities in contour of the inner surface are much more pronounced because of the infoldings of the epithelium. The absence of budding or out-pouchings and the non existence of



Fig. 3 Anterior view of the follicles dissected from the normal human thyroid including the surrounding capillary bed and showing the vessel of ingress and the capillary distribution. The white area about the periphery of the follicle is due to reflection of the light thrown down on the follicles by the convex edge of the epithelial wall.

interacinar fetal cell rests or islands of epithelial cells are confirmed in these abnormal thyroids.

The great preponderance of small follicles in the normal gland suggests that the thyroid tissue is completely differentiated in the adult and that after puberty the number of follicles is not increased by the growth of secondary vesicles from primary follicles. The author believes that the small follicles form a reserve supply of parenchyma which when called on to function does so by an increase in size due to hypertrophy and hyperplasia of the epithelium. This is borne out by the absence of budding or



Fig. 4 Camera lucida drawing of isolated exophthalmic follicles showing the smooth external contour with the very irregular internal surface. The thin epithelial roof or dome of this follicle is shown by the high lights while the watery colloid inside the follicle is represented by the dark areas. Finger-like budding into the lumen of the epithelial lining is readily seen.

division, the smooth contour of the external surface of the follicles, and the decrease in the proportion of small to large follicles in the exophthalmic gland. The absence of lobulation in the thyroid gland has its basis in the embryological development of the organ.

From his study, Rienhoff concludes that the current conceptions of interacinar cell rests are erroneous, that there are no such epithelial or fetal cell rests in the thyroid gland whether it is normal or whether it comes from a case of exophthalmic goiter and that the persistence of any type of fetal tissue in the adult thyroid does not occur.

LEO M. ZIMMERMAN, M.D.

Dobrovichij, P. and Vvedenskij, N. The Influence of Thyroxin on the External Secretion of the Pancreas and on the Fermentative Properties of the Secretion (Der Einfluss von Thyroxin auf die äussere Sekretion des Pankreas und auf die fermentativen Eigenschaften des Sekrets). *Verhandl. d. 3 russ. Physiol. Kong.*, Moscow, 1929, p. 27.

The authors found that the intravenous administration of 10 mgm. of thyroxin to dogs weighing from 15 to 18 kgm. usually caused a diminution in the secretion of pancreatic juice which lasted for two or three days. Sometimes this decrease was preceded by a transient increase. When an increase resulted there was a decrease in the fermentative properties of the secretion whereas in the animals with primary inhibition of the secretion, the fermentative properties of the secretion were increased. Therefore the fermentative properties under the influence of thyroxin are dependent upon dilution of the ferments by the pancreatic juice.

E. BANNER VOIGT (Z)

Azimov, G. and Lapiner, M. The Demonstration of Thyroid Hormone in the Blood and Urine of Hyperthyroidized Dogs (Ueber die Feststellung des Schilddrüsenhormons im Blut und Harn hyperthyroidisierter Hunde). *Verhandl. d. 3 russ. Physiol. Kong.*, Moscow, 1929, p. 25.

Two dogs with extensorized ureters were fed large quantities of desiccated thyroid and their blood and urine then studied by the Gudernatsch reaction on axolotls. In all, 136 tests were made. The appearance of the thyroid hormone in the blood of hyperthyroid mammals described by Zavadovskij and Azimov was confirmed. After twenty-four hours the hormone was no longer to be demonstrated by the method described. The maximal content of hormone was reached from eight to fourteen hours after the feeding. In the urine, an excretion of the hormone reaching its maximum after from six to eighteen hours was demonstrated. E. BANNER VOIGT (Z)

Dunhill, T. P. Toxic Goiter. *Brit. J. Surg.*, 1930, vol. 4, 424.

The author is of the opinion that, with the exception of inflammations and malignancy, thyroid diseases are related, and that in the classification of

goiters the clinical condition of the patient should be taken into consideration as well as the histopathological appearance of the gland.

The differences which may occur in the manifestations of toxic goiter in different patients are so obvious as to suggest two diseases, one called "exophthalmic goiter" and the other "toxic goiter." The so-called exophthalmic goiter, which is characterized by staring eyes, pronounced nervous symptoms, and a rapid but usually regular cardiac rhythm, is most common in early adult life, whereas the so-called toxic adenoma, in which exophthalmos is rare and the nervous symptoms are comparatively mild, but the cardiac rhythm is irregular and congestive heart failure is not uncommon, tends to occur about two decades later.

In the author's opinion these two syndromes represent a single disease the manifestations of which differ according to the stimuli acting upon the thyroid gland, the condition of the gland at the time it is influenced by abnormal stimuli, and the organs affected by the disordered thyroid secretion.

When the condition is primary, Dunhill does not operate during the earlier months as in many cases recovery results under conservative treatment consisting in the removal of septic foci, adequate rest, and the administration of small doses of iodine. If improvement does not occur under such treatment or if signs of complications appear, operation is considered.

When the disease is of the secondary type, operation is performed as soon as the patient can be given sufficient preparation.

As regards the prognosis without operative treatment, Dunhill states that it is important to consider the incidence of eye complications, glycosuria, mania, auricular fibrillation, and fatal acute thyroid toxemia.

Exophthalmos always becomes less marked after an adequate operation. The results of the ligation of an artery may be surprisingly good, but are almost never permanent. The author believes that most recurrences are due to insufficient removal of thyroid tissue.

R. V. B. SNIER, M. D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Dandy, W. E. Injuries to the Head *J Med Soc New Jersey* 1930, XLII, 97

Dandy states that in determining the course of action to be taken in cases of head injuries it is important to consider the state of consciousness the pulse and respiration as determined at intervals of from ten to fifteen minutes the temperature the presence or absence of restlessness the presence or absence of incontinence of urine and feces and the blood pressure. He considers the temperature a more valuable index than the blood pressure.

If the patient is able to withstand surgical intervention Dandy believes that operation is warranted in the following conditions:

1 Depressed skull fracture The continued presence of the depressed fragment may lead to serious consequences, chief among which is epilepsy.

2 Extradural hemorrhage This is usually characterized by intermittent loss of consciousness. It should be treated by evacuation of the clot and ligation of the middle meningeal artery, usually at the foramen spinosum.

3 Subdural hematoma This usually causes headache which persists for several weeks after the accident and ultimately is accompanied by paralysis and mental changes. It should be treated by evacuation of the clot with its surrounding membrane.

These are the main conditions requiring operation but surgical measures are occasionally necessary in compound wounds and fractures through the frontal or anterior ethmoid sinus. Compound wounds should be immediately sewed up without drainage. The fractured sinus may be closed with a fascial transplant.

The author discusses also the procedures indicated in cases in which operation is not to be performed the diagnosis and treatment of the more usual complications of head injuries such as pneumocephalus, subdural hydrops and arteriovenous aneurysm and the diagnosis and treatment of unexpected late complications.

ERIC OLDBERG, M.D.

Steindl, H. Open Brain Injuries in Children and Their Treatment (Offene Hirnverletzungen bei Kindern und deren Behandlung) *Deutsche Zeitschr f Chir* 19 9 CCXII, 221

Whereas the Hochenegg Clinic has abandoned the Barany technique of primary wound closure after infected injuries of the brain because of the development in some instances of such sequelae as progressive encephalitis abscess and perforation of the ventricle, it is very well satisfied with the tampon treatment inaugurated by Albrecht. The latter

gives especially good results in children. The author reports on four cases of infected and severe crushings of the skull and brain (three frontal and one occipital) which were completely and permanently cured by this method even though two of the patients presented symptoms of encephalitis when they entered the hospital.

After a thorough cleansing of the wounded area of foreign bodies hairs, splinters of bone, and traumatized brain substance such as is necessary for the radical removal of the covering portion of the skull, a Mikulicz tampon soaked in a 1 to 2 per cent solution of collargol is applied in such a way that it is in close contact everywhere with the wound surface comes to a point inward in the shape of a cone, and toward the exterior presents the broadest surface possible. This assures effective drainage of the secretions of the wound and of spinal fluid fistulae the chief object of the tampon treatment. Spinal fluid fistulae, which otherwise are followed by certain death heal up under the tampon. The tampon is applied tightly in order that the mechanical factor of pressure may be utilized to overcome the tendency toward prolapse which always exists so long as encephalic foci are present. A case of brain abscess which was admitted for treatment three weeks after the trauma was also cured by wide opening and tamponade. The first tampon is left in place for from ten to twelve days. During this time there develops in the child, which has a considerably better power of reaction than the adult, almost a firm walling off of the wound. Subsequent removal of the tamponade as well as the lumbar punctures which are necessary occasionally in late cases for the better unfolding of the brain surface and the reduction of pressure should be done under anesthesia in order to spare the child the shock caused by pain and to keep it quiet for the careful carrying out of the treatment. Steindl admits that the favorable results of the treatment are attributable largely to the better blood circulation in the brain of the child as compared with that of the adult.

SIEVERS (Z)

Delta Torre, P. L. Generalized Epilepsy of the Essential Type in a Case of Ampullar Dilatation of the Superior Longitudinal Sinus (Epilessia a tipo essenziale generalizzata in un caso di ectasia ampollare del seno longitudinale superiore) *Arch Ital di chir*, 1929, XXV, 157

The patient whose case is reported was a man of twenty five years who was admitted to the hospital in a semi comatose condition following a severe attack of generalized epilepsy. He showed the characteristic symptoms of the postparoxysmal stage. His father had died of cerebral hemorrhage following arteriosclerosis and alcoholism at the age of

sixty-three years, and his mother had died of apoplexy at the age of forty years. When the patient was in the army in his twenty third year he had been pursued by the enemy, caught, and beaten over the head. While the beating was not severe enough to cause loss of consciousness, he suffered violent psychic shock from the experience, and a few days later began to have attacks of epilepsy from which he had suffered ever since. The author treated him with a sulphur solution with the same constituents as spinal fluid except albumin. He showed improvement under this treatment for some time, but ultimately the attacks recurred and became more frequent. Intravenous injections of a 30 per cent glucose solution had no effect. During this period, tonic contractures beginning in the upper limbs were noted. On this indication and for decompression, a trephination was planned, but the patient died in an epileptic attack before it was performed.

Autopsy showed an ampullar dilatation of the superior longitudinal sinus at the site of the central convolutions. It was a soft, bluish cylindrical tumor, roughly spindle shaped at the ends, 4 cm long, and with a maximal diameter of 2 cm. It was reducible on slight pressure.

The author discusses whether the epilepsy in this case was a true or a symptomatic epilepsy and decides that it was reflex and might have been cured by removal of the dilated segment of the sinus. He discusses also the value of the sulphur solution he used. He states that he has had good results from this solution in two cases of true epilepsy.

Dilatation of the sinuses of the dura mater is very rare. The author concludes that in his case it was congenital as microscopic examination showed no signs of inflammation. He attributes the epilepsy to the psychic trauma added to the irritation of the increasing dilatation of the sinus.

AUDREY G. MORAN, M.D.

Krabbe, K. H., and Wissing, O. Calcifications of the Pia Mater of the Brain of Angiomatous Origin Demonstrated by Roentgenography (Calcifications de la pie mère du cerveau d'origine angiomateuse démontrée par la radiographie). *Acta radiol.*, 1929, x, 523.

The authors report four cases in which roentgen examination of the head revealed shadows corresponding to limited parts of the surface of the brain. Three of the four patients presented angiomatous naevi of the face. The authors attribute the shadows described to calcified angiomata of the pia mater. Ten cases are cited from the literature.

#### SYPHATHETIC NERVES

Stricker, P., and De Girardier, J. Late Result (Two Years) of Unilateral Lumbar Sympathectomy (Résultat éloigné—deux ans—d'une sympathectomie lombaire unilatérale). *Lyon chir.*, 1929, xvi, 979.

The authors' object in making this report was to show that it is unnecessary, in similar cases, to

sacrifice both lumbar chains since unilateral sympathectomy results in bilateral vasodilatation. The patient was a man thirty-seven years of age who was suffering from circulatory and trophic disturbances in both lower extremities which began after frostbite in 1916 and had been becoming progressively worse. The frostbite was followed immediately by bilateral cyanotic oedema of the legs, but there were no phlyctene or ulcers. The oedema subsided under alternate treatment with hot and cold water, but the circulatory disturbances persisted and were accentuated by fatigue and by cold. Later, the oedema reappeared, accompanied by ulcerations on the toes and over the phalangeal joints. The patient spent two years in a military hospital. On his discharge he was able to do moderate work, but was obliged to take a month's rest from time to time because of recurrence of the oedema with pain and a sensation of weight and painful cramps in the lower limbs. The cramps occurred when he remained too long in one position. His disability allowance was increased from 40 to 60 per cent. Three seasons spent at a hot springs brought only temporary improvement. For the last year he had been completely unable to work.

When the patient was examined by the authors in March, 1927, the right foot presented slight oedema, purple marbling, redness, and flexion deformities of the toes, deformity, brittleness, and tenderness of the nails, abnormal warmth of the skin associated with the subjective impression of cold, and two extensive indurations on the sole. The right leg showed brownish pigmentation of the skin, particularly a large plaque which covered the anterior and internal surfaces above the malleoli and presented traces of repeated ulcerations which had healed. Above the brown plaque there were a number of small red plaques typical of the purpuric pigmented dermatitis described by Favre. The changes in the left foot were similar but less marked. Ulcerations were present. Instead of a pigmented plaque, the left leg showed a number of isolated brown pigmented spots indicating the sites of previous ulcers. When the patient stood the color of the anterior portion of the foot, which was pink in the recumbent position, became a deep red and the foot became very hot. If the patient was made to walk about for a moment or if the examination in the upright position was prolonged, he complained of pricking sensations in the feet. The phenomena of intermittent claudication had never been present. Except for frequent chilblains of the hands, the upper extremities presented no disturbances. The arterial pulsations were clearly perceived in both dorsalis pedis and both posterior tibial arteries. The oscillometric index (Faxon's apparatus) was  $4\frac{1}{2}$  at the left instep, 5 at the right instep, 5 at the left thigh,  $6\frac{1}{2}$  at the right thigh, and  $2\frac{1}{2}$  at the right forearm.

Lenzke decided to resect the lumbar sympathetic chain on the right side. Because of the diffusion and the long duration of the disturbance he believed that periarterial sympathectomy would be insuffi-



cient One centimeter of the lumbar chain was resected On the evening of the day of the operation a considerable elevation of temperature was noted in the right lower extremity as compared with the left, and the patient stated that both lower limbs felt warm whereas previous to the operation they had always felt cold. Tension was increased at both insteps and in the right forearm Two days after the intervention the patient was able to move both great toes easily whereas before the operation it had been impossible for him to move them The local temperature was then the same on both sides 33.6 degrees C Fifteen days after the intervention, the discoloration of the skin of the feet and legs was greatly improved The toes were much less painful and could be moved easily The trophic disturbances were in retrogression However cramps with the sensation of dead finger and functional weakness had appeared in the left hand and the thenar eminence presented slight atrophy (No further mention is made of the condition of this hand—Abstractor)

The improvement in the feet continued, the patient becoming able to walk without fatigue and to support his weight on his toes without pain As he began to walk again varicose veins developed For the relief of this condition, the internal saphenous veins were excised

Two and a half months after the first operation the patient left the hospital without pain or heaviness in the lower limbs and able to walk and run His skin was warm and supple and free from all traces of the purpuric pigmented dermatitis When he was seen at intervals thereafter he was always in good condition He was able to wear leather shoes, which he had not done for years In January, 1929, he complained of pains in the ankles and along the course of the veins and stated that his legs were swollen in the evening but on examination nothing abnormal was found A few injections of acetylcholine and of mercurous cyanide relieved the symptoms and in February, 1929 he was in excellent condition

FLORENCE A. CARPENTER

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Slanina, P. Tuberculosis of the Breast (Tuberkulose der Brustdrüse) *Cas lek Cesk*, 1929, II, 1369

Infection of the breast by tubercle bacilli can occur by primary external inoculation of the milk ducts (rare), metastatically by way of the blood stream or the lymphatics, or by extension of the infection from neighboring tissues such as the cervical lymph nodes, sternum, ribs, pleura, and lungs. The condition is most common in women between the ages of twenty and fifty years.

Pathologically, tuberculosis of the breast occurs in an acute miliary, a disseminated, a nodular, or a cirrhotic form. The nodular form is the most common. In the cirrhotic form obliterated milk ducts lead from the nipple to lobules which have been changed into firm masses of connective tissue.

The miliary form is without surgical significance. Most frequently there appears in the upper outer quadrant of the breast a nodule which is difficult to differentiate from an adenoma and is impossible to differentiate clinically from a carcinoma. The nipple is retracted. When the nodules soften, characteristic fistulae or cold abscesses develop and the diagnosis becomes easy.

In the cirrhotic form, the breast is shrunken and firm cords and nodules are palpable within it. Biopsy is contra indicated.

Tuberculosis of the breast may be confused also with luetic mastitis or actinomycosis. Combinations of tuberculosis and carcinoma may occur. The author cites two cases of the latter type from the literature—one with bleeding from the nipple—and reports two cases of his own.

The only rational therapy is amputation of the breast with dissection of the axilla. In young girls, resection of the breast may be considered. General treatment is also necessary. The author disapproves of X ray therapy. The prognosis depends upon the patient's general condition. The results of operation are favorable.

HAIN (Z)

Adair, F. E. Sanguineous Discharge from the Nipple and Its Significance in Relation to Cancer of the Breast. *Ann Surg*, 1930, xci, 197

Adair reviews 108 cases of bleeding nipple due to tumor. Of the 51 neoplasms which were malignant, 48 were carcinomata and 3 were sarcomata. In 49 cases the bleeding was due to a papilloma, and in 8 to chronic mastitis.

Microscopic examination of stained smears of the nipple discharge and transillumination are of aid in the diagnosis and treatment. In cases of papillary cystadenoma, transillumination shows an opaque, sharply defined tumor. NATHAN N. CROWN, M.D.

## TRACHEA, LUNGS, AND PLEURA

Van Allen, C. M., and Adams W. E. The Mechanism of Obstructive Pulmonary Atelectasis. *Surg, Gynec & Obst*, 1930, I, 385

The experimental work reported in this article was undertaken because of repeated failures to obtain atelectasis following complete stenosis of a bronchus. The factors supposedly responsible for massive atelectasis are (1) decreased respiratory force, first emphasized by Pasteur, (2) disturbance of pulmonary circulation, (3) bronchial obstruction, and (4) combined factors, principally the combination of bronchial obstruction and decreased respiratory force.

The authors' experiments were performed on dogs and were divided into four groups according to whether the respiration was quiet or straining and whether the bronchial obstruction produced was total or valvular. The periods of obstruction varied from two to twenty-four hours. The respiration was quiet in ten dogs and of the straining type in twenty-two. In the animals with quiet respiration no lung deflation or atelectasis developed whereas in those with respiration of the straining type atelectasis involving from 12 to 100 per cent of the lung parenchyma resulted. The rate of development of the atelectasis varied not only with the type of respiration but also with the type of obstruction. It was much quicker when respiration was of the straining type. Total obstruction rarely caused more than 25 per cent atelectasis in six hours, whereas valvular obstruction brought about high degrees of atelectasis within two hours. The atelectasis began in the region of the hilum and extended peripherally.

The authors conclude from their findings that the decrease in the respiratory excursions observed in clinical cases of massive collapse is the result rather than the cause of the atelectasis, and that the measures employed in the treatment of atelectasis may aggravate rather than relieve the condition.

ALTON OCHSNER, M.D.

Moore, J. A. Phrenicectomy in the Treatment of Pulmonary Diseases. An Analysis of Sixty-Three Cases. *Arch Surg*, 1930, xx, 175

Phrenicectomy has its widest field of application in the treatment of predominantly unilateral pulmonary tuberculosis. It definitely increases the effect of artificial pneumothorax, often rendering an unsatisfactory collapse satisfactory. The author believes it should be done before every extrapleural thoracoplasty. Combined with multiple intercostal neurectomy, it offers a chance for cure in a small number of cases in which pneumothorax and thoracoplasty cannot be done.

In bronchiectasis it occasionally results in a cure, but as a rule the improvement is not permanent. Combined with postural drainage it should be considered as a prophylactic measure against bronchiectasis in every case of so called fibroid pneumonia, and in early cases of unilateral bronchiectasis it is the treatment of choice.

The author believes that the operation should be done more frequently also in the treatment of pulmonary abscess.

GEORGE A. COLLETT, M.D.

Lambert, A. V. S., and Berry, F. B. Thoracoplasty During Treatment of Pulmonary Tuberculosis. *Ann. Surg.*, 1930, xci, 57.

The authors believe that thoracoplasty for the treatment of pulmonary tuberculosis should be done in two or more stages. When in their earlier experience they attempted to remove all of the ribs in one stage the mortality in the first two weeks after the operation was 25 per cent and the late mortality 14 per cent. They state that a greater degree of collapse can be obtained by removing the upper ribs first and they advocate dividing the ribs as close as possible to their attachment to the transverse process of the vertebrae. They usually remove from 10 to 12 cm. of the lower ribs and a gradually diminishing amount as they proceed upward. From 1 to 2 cm. are removed from the first rib.

In their earlier cases they divided the phrenic nerve only when a cough persisted with or without positive sputum, after a complete thoracoplastic collapse had been accomplished. Recently they have divided the phrenic nerve as a preliminary step to the procedure and have come to the conclusion that this is the proper sequence.

Their series of cases shows that the condition of the contralateral lung is of vital importance and that it is extremely difficult to estimate the significance of the X-ray evidence of former disease.

Of the twenty-four operative deaths in the cases reviewed sixteen occurred in cases of bilateral lesions and seven of these were due to an immediate spread or reactivation of the disease in the contralateral lung whereas of the eight operative deaths in cases of unilateral lesions only one was due to that cause.

The authors have taken as a criterion of whether a case is active or quiescent the sole symptom of fever disregarding slight haemoptysis or streaking. The choice of anæsthetic is of great importance. They have employed nitrous oxide and oxygen, ethylene and oxygen, local anæsthesia and spinal anæsthesia induced with spino-caine. Each of these has advantages and disadvantages.

Of the 100 cases reviewed in which 157 thoracoplastic operations were done 64 were unilateral and 36 were bilateral. In the unilateral cases the operative mortality was 12 per cent (8 deaths) and the late mortality, 11 per cent (7 deaths). Postoperative haemoptysis occurred in 1 case. Twenty-three (36 per cent) of the patients were cured, 16 (25 per cent) were benefited, 5 were not benefited and 4 showed

improvement as long as they were under observation, but later could not be traced.

In the bilateral cases the operative mortality was 44 per cent (16 deaths) and the late mortality 25 per cent (9 deaths). Four (10 per cent) of the patients were cured, 5 (14 per cent) were benefited and 2 were not benefited.

The authors regard the condition as cured or arrested when the patient is free from all symptoms and is able to lead an active life after two years.

CARL R. STEINKE, M.D.

## HEART AND PERICARDIUM

Lundberg, A. Three Cases of Healed Aortic Rupture. *Acta med. Scand.*, 1930, lxxv, 19.

The first two cases reported were examples of that very unusual type of aortic rupture which heals and because of its position causes a dislocation of the aortic valves preventing perfect closure of the valves and thereby producing the symptoms of aortic insufficiency. In the first case the causative agent was probably a rush of blood against the aortic valve with a consequent increase in the blood pressure which took place in the course of a fall on the head from a height that occurred fifty-four years before the patient died. In the second case the cause was almost certainly an acute intense increase of the blood pressure during a state of sexual excitement in a patient whose aorta was weakened by malaria (possibly syphilis).

The third case was unique in several respects. The healed rupture was located not in the region of the aortic valve but in the descending aorta, an effect on the valve being therefore unlikely. In the ascending aorta there was another rupture which was quite recent and had produced an intramural hematoma and hæmopericardium which probably gave rise to tamponade of the heart. It was impossible to determine the cause of the rupture in this case.

## ESOPHAGUS AND MEDIASTINUM

Stråhle, L. Antethoracic Oesophagoplasty (Antethoracale Oesophagusplastik). *Acta chirurg. Scand.* 1930, lxxi, 1.

The author reports upon the results of antethoracic thoracoplasty in three cases.

In the first case the patient was in good health after the operation but was unable to eat meat. His death occurred by drowning. Autopsy revealed first a blind sac 6 cm. long below that a solid circular atresia 6.5 cm. long, and below that the normal oesophagus 2 cm. long. The blind sac was not dilated. Its musculature was hypertrophied. The anastomosis between the oesophagus and the skin tunnel admitted a No. 13 Charrière bougie, and that between the skin tunnel and the intestine a No. 30 Charrière bougie. The passage between the intestine and the stomach was the caliber of the index finger. The intestinal tube was 20 cm. long. The

skin tube was pale and showed no signs of irritation on microscopic examination

Case 2 was that of a child five years of age who was operated upon according to the Roux-Lexer technique. The intestine became gangrenous from upper end to the epigastrium, and in spite of repeated operations it was impossible to join the skin tube to it. Death resulted.

Case 3 was that of a woman nineteen years of age who was also operated upon according to the Roux-Lexer technique. Healing resulted within three and a half months without a secondary operation and in spite of recurrent pulmonary complications.

In a technique for lateral anastomosis between the œsophagus and the skin tube suggested by the author an incision is made along the inner border of the sternomastoid muscle, beginning about 1 cm from the sternum and the œsophagus then liberated. From 2 to 3 mm below the point where the œsophagus joins the lower angle of the wound, the anterior œsophageal wall is gathered up by means of a silk suture passed through the muscular layer. The posterior wall is gathered up in the same way about 1 cm higher. A loop of the sternomastoid muscle is then detached, passed around the œsophagus, and fixed to the soft parts on its internal aspect, and the edges of the skin are sutured to the œsophagus in such a way that the lower ungathered part of the tube is made to protrude forward. Above this point the skin edges converge, coming together about 4 cm above the upper angle of the wound. After from eight to ten days the protruding portion of the œsophagus is excised and the mucous membrane is sutured to the skin. The skin tunnel is completed at the same operation.

If it is impossible to make the anastomosis sufficiently large, that is, about 4 cm long, the axial method is probably to be preferred.

## MISCELLANEOUS

Vepriklj, M. The Treatment of Subpectoral Abscesses, Particularly Acute Suppurative Lymphadenitis (*Zur Therapie der subpektoralen Abscesse besonders der akuten eitrigen Lymphadenitis*) *Vrac Delo*, 1929, vii, 518.

Infection of the axillary lymph glands usually occurs by the lymphogenous route, but in some cases by the hæmatogenous route from the skin, the shoulder joint or the apex of the pleural cavity, and in others by the retrograde route extending from the deep lymphatics to the peripheral glands. It advances readily into the loose cellular tissues of the axilla, back, and breast. The diagnosis and the discovery of the initial focus are difficult only when the process takes its origin from distant glands lying under the muscles.

Of particular importance are the cases in which the condition extends and leads to abscess formation beneath the pectoral muscles. Vepriklj reports nine cases of this type. In some of them, treatment by short incisions and tamponade of the axilla had been given previously, but the fistula failed to close and the pain and immobility of the arm persisted. In the treatment used by the author, the abscess cavities, including those under the pectorals, were opened widely and treated openly without tampons. As a rule an incision along the posterior border of the pectoral muscle was sufficient, but occasionally a transverse incision through the muscles was necessary in addition. In four cases, Besredka's filtrate was introduced into the cavity and applied on a compress. This form of treatment resulted in prompt healing. In the cases in which it was used from the beginning, recovery was considerably quicker. The results were especially good when Besredka's filtrate was employed.

LEONOLD HOLST (?)

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

MacGregor, W. W. *The Fundamental Operative Treatment of Inguinal Hernia* Surg, Gynec & Obst 1930 1 438

In a previous article the author dealt with the demonstration of a true inguinal sphincter formed around the abdominal os of the inguinal canal by circular fibers of the internal oblique and transversalis muscles. His study indicated that this sphincter functions to protect the internal opening of the inguinal canal by a constant state of tonus and by contractions occurring whenever the intra-peritoneal pressure is increased. It indicated also that the primary factor in the causation of inguinal hernia is insufficiency or paresis of this sphincter, and that any operation directed at cure of the hernia must have as its basis the correction of the sphincteric failure.

The operation advocated by MacGregor is as follows:

After the usual Bassini incision, a grooved director is inserted between the pillars of the external ring, the aponeurosis of the external oblique is split in the direction of the internal os, and the sac is separated, emptied, ligated, and excised in the usual manner. The internal inguinal sphincter is then identified and its relative insufficiency determined. Any defect is corrected by displacing the cord to the upper inner quadrant of the ring and so shortening and suturing the outer fibers of the sphincter with No. 1 chromic catgut as best to restore the snugness and tonicity of the muscular ring. The sutures in no way involve the shelving edge of Poupart's ligament. They serve only to bring together the deficient lower outer portion of the inguinal sphincter. Throughout all of the manipulations care is taken to prevent injury to the ilio-inguinal or iliohypogastric nerves, since traumatism of their motor fibers may defeat the purpose of the intervention by producing degenerative paresis of the internal inguinal sphincter.

W. N. ROWLEY, M.D.

Reinike, W. *The Problem of Pseudomyxoma of the Peritoneum* (Zur Frage ueber das Pseudomyxoma peritonei) Ginek 1929 11 347

The chief problem associated with pseudomyxoma of the peritoneum is whether the condition is the result of a peculiar disease of the ovaries with perforation of the masses of pseudomucin into the peritoneal cavity or has its origin in the vermiform appendix.

The author reports four cases in none of which it is possible to demonstrate previous disease of the genital organs. The important clinical symptoms were diarrhea, pains in the pit of the stomach,

nausea and vomiting. In two cases these symptoms had appeared two and ten years previously. Only three advanced cases presented fluctuation and dullness in the umbilical region and a dull tympanic note along the axillary line which remained unchanged with a change of position. Colloid crepitation was not noted. Exploratory laparotomy was preferred to exploratory puncture because it revealed the operability of the condition as well as its nature. The Davis reaction was positive in three cases but the serum reaction was not specific. Although the condition has no absolutely pathognomonic symptom, it may be suggested by the history and the findings of palpation and percussion. In all of the four cases reported by the author the appendix was markedly changed and elongated, in one case it was 1½ fingers wide. Macroscopically, no site of perforation could be found. In all of the cases the peritoneum showed a reactive inflammation.

On careful microscopic examination the wall of the appendix was found in three cases to be covered by high cylindrical epithelium with villi resembling connective tissue which was similar to that of the cyst wall, and the cells were morphologically identical with those of the cyst wall.

The author believes that the appendix and cysts were affected by the same disease, and that the palisade-like cylindrical epithelium produced the mucous colloidal fluid. On the basis of the more inward lying line of demarcation he concludes that the process in the appendix developed from within outward. The pseudomyxomatous affection of the appendix in its distal end and the almost complete absence of lymphatic follicles and hypertrophy of the connective tissue of the muscle layer indicated that the disease spread from the distal end of the appendix. Unfortunately not a trace of a perforation was demonstrable in the four cases. In one instance however there was a small cyst on the free surface of the appendix opposite the mesenterolum and because the extreme thinning of the wall of the appendix and the absence of a muscle layer in the immediate neighborhood of the cyst wall it is possible that the perforation occurred at this site with secondary cyst formation.

While it could not be determined in the cases reviewed whether the appendix or the ovary was the primary site of the disease it is now known that pseudomyxoma is not exclusively of ovarian origin. Moreover the fact that recurrences after operation appear more rapidly in cases in which the appendix has not been removed suggest an appendicular origin.

With operative treatment the clinical course is relatively favorable.

T. PETERSON (Z)

Mandelstamm, A. Sarcoma of the Greater Omentum (Zue Frage ueber das Sarkom des grossen Netzes) *Ginek.*, 1929, III, 274

This article is based on four cases of primary sarcoma of the greater omentum seen by the author and forty nine cases reported in the literature. In two of the author's cases the primary tumor was found to be limited to the greater omentum, but there were small superficial disseminations in the surrounding organs. The clinical picture was characterized by rapid growth of the neoplasm, dyspeptic symptoms, vomiting, and invalidism. Objectively, the sign of Kiparskiy could be elicited. The tumor could be easily moved from side to side, but was almost immovable in the up and down direction. In his two other cases the author was able to establish the origin of the sarcoma in the omentum with considerable certainty on the basis of the complete involvement of the omentum and the relatively slight involvement of the genitalia and abdominal organs. However, it is not always possible to demonstrate the site of origin of the sarcoma even at autopsy.

In the great majority of cases the beginning of the disease is unnoticed. The symptoms developing later include a sensation of pressure, anorexia, gradual loss of strength, nausea, and vomiting. These symptoms are soon followed by rapid emaciation, an abdominal tumor, atony, gradually developing ileus, and ascites due to interference with the portal circulation.

Microscopically the neoplasms may be classified into two groups. To the first group belong the solitary tumors, often of large size, which either conform to the basic shape of the omentum or deform the omentum by knobby, bluish red new growths with a usually well developed venous plexus which cause it to resemble a large, blood soaked sponge. In occasional cases, as in those reported by the author, the venous plexus is astonishingly small. Because of the reactive inflammation, the tumors of this group form extensive adhesions. The neoplasms in the author's first two cases were of the type just described.

Tumors of the second group form innumerable cherry-like and grape-like masses and tubercles which at times coalesce, transforming the omentum to a thick, scarcely movable apron like mass. The course of tumors of this group is more rapid and associated with metastasis to the peritoneum.

There are also transition types with an exceptionally rapid course due to a strong tendency toward dissemination.

The most frequent type is the spindle cell sarcoma, and the most malignant type, the round cell sarcoma.

The diagnosis is exceedingly difficult even in typical cases. It is based chiefly on the superficial development of the tumor, immediately beneath the abdominal wall, in the region of the umbilicus, and somewhat to the left, a resonant percussion note over all parts of the tumor, and Kiparskiy's sign. Sometimes the neoplasm moves with inspiration, ex-

piration, and peristalsis, and sometimes the pulsations of the aorta are visible. When the tumor is very large and not very mobile, the differential diagnosis is especially difficult. Solid tumors and cysts of the abdominal wall are immobile and much smaller, while tumors of the omentum disappear under the palpating finger when the abdominal musculature is contracted. Tumors and echinococcus cysts of the liver move with the liver during respiration, and their connection with the liver may be demonstrated by careful percussion and palpation. Gastric and pancreatic tumors develop in the epigastrium and are rather fixed, they cause pronounced functional disturbances and icterus. Malignant tumors of the colon are characterized by their location at the flexures and in the region of the caecum. They are almost immobile and of slow growth, and lead to stenosis. Tumors of the kidney are retroperitoneal and covered by the intestine with its tympanic percussion note. The kidney is movable upward and downward, but cannot be moved from side to side. Mesenteric lymph glands differ from tumor of the greater omentum in that the glands lie behind the intestines and therefore produce no damping of the percussion note. In the differentiation from tumors of the genital organs percussion is decisive, the damping of the percussion note breaks off sharply in a crescent-shaped line corresponding to the greater curvature, and below it curves downward.

An exceptionally rapid sedimentation reaction suggests inoperability, but operation should not be refused as occasionally an operable, rapidly growing tumor (necrosis, suppuration) causes acceleration of the sedimentation reaction.

Because of the difficulty of early diagnosis, the prognosis is generally unfavorable. Operation is unconditionally indicated. According to Lozinskiy, resection of the entire omentum is necessary to prevent recurrence.

T. PETERSON (Z)

## GASTRO-INTESTINAL TRACT

Haberer, H. von. Diagnostic and Therapeutic Errors in the Field of Digestive Diseases and Their Prevention (Diagnostische und therapeutische Irrtümer auf dem Gebiete der Verdauungskrankheiten und ihre Verhütung). *Verhandl. d. Gesellsch. f. Verdauungs- u. Stoffwechselerkrankh.*, 1929, pp. 252, 279.

Gastric ulcer and dyspepsia are still frequently confused in spite of the advances that have been made in roentgenographic procedures. The author warns against operating on the stomach or duodenum in the presence of negative operative findings. Gastroenterostomy is especially inadvisable under such circumstances because of the danger of post-operative peptic ulcer. Resection for so called ulcer-forming gastric catarrh is also contra indicated as the results are seldom satisfactory. Included among the mistakes of intervention is resection for exclusion of the intestine.

Hæmorrhages following gastroenterostomy are often attributed erroneously to the old ulcer, and

renewed pains are attributed to postoperative adhesions. In the majority of cases some other condition is responsible—after gastro enterostomy, a peptic ulcer and after extensively extensive resections disturbances due to the small achylous stomach which require dietetic therapy supplemented by the administration of acidolpepsin. In some cases there is an associated cholelithiasis. Pyonephrosis may be confused with symptoms of postoperative adhesions. In the presence of an epigastric hernia the possibility that the symptoms may be caused by an ulcer behind the hernia must be considered.

The author warns against relaparotomies for the liberation of adhesions because they are usually unsuccessful. He also repudiates the so called "internal therapy" which frequently leads to peptic ulcer. In cases of ulcer penetrating deeply into the pancreas, the base of the ulcer should be left untouched at the time of the operation on account of the danger of pancreatitis. Similarly, pancreatic lesions should be painstakingly avoided during an operation for ulcer on the posterior wall of the duodenum.

Carcinomatous change of an ulcer is not very rare and is often recognized by histological examination when only a simple ulcer is suspected. In one case the author saw carcinomatous degeneration eleven years after a gastro enterostomy for callous ulcer and in another case he found a benign callous ulcer next to a definite carcinoma. In four cases he assumed the presence of a carcinoma when the symptoms were due to syphilis. As the differentiation of carcinoma and syphilis is very difficult, and as laetic affections usually disappear under the use of iodine he recommends iodine for all cases of apparently inoperable carcinoma of the stomach. Even in definite cases the symptoms of a crisis may be simulated by an ulcer and may be favorably affected by resection.

As duodenal ulcers with a latent course may very suddenly lead to severe attacks of pain confusion of this condition with gall bladder affections or appendicitis is possible. It should be borne in mind however that appendicitis and ulcer are often associated and that there may even be a reciprocal relationship between them.

For cases of acute gastric hemorrhage the author recommends a waiting policy. A often multiple ulcers are present and the site of the ulcer that is bleeding is difficult to find. He calls attention also to the gastric hemorrhages associated with cirrhosis of the liver, varices and hepatosplenic diseases.

As perforation of an ulcer has occurred in connection with roentgenographic examination, von Haberer states that a roentgenographic examination should never be undertaken without a previous careful clinical examination.

In the discussion on diseases of the gall bladder, attention is called to the fact that the hydropic calcareous gall bladder may become so large that it may be mistaken for an ovarian cyst. In a case of apparently acute cholecystitis which was seen by the author the symptoms were due to torsion of the mesen-

tery which had produced a pear shaped, painful tumor in the region of the gall bladder.

Confusion of gastro intestinal diseases with diseases of the kidneys is prevented by cystoscopy and tests of renal function.

The after pains following cholecystectomy are difficult to judge. Only too often they are attributed to adhesions when if they are not due to a true or pseudorecurrence, they are caused by inflammatory processes in the biliary tract.

In all operations on the gall bladder the pancreas should be subjected to a thorough examination because acute pancreatitis very often accompanies or follows cholelithiasis. In the diagnosis of acute pancreatitis the abnormally severe pains which sometimes are not relieved even by morphine, the early paralytic ileus and the never failing peculiar cyanosis of the face should be given special consideration.

In discussing chronic obstruction, the author warns against hasty and ill advised operations especially anastomoses and extensive resections of the colon.

With regard to appendicitis von Haberer says that the abscess in the cul de sac of Douglas and its dissemination toward both sides are often overlooked, and that in earliest infancy, acute appendicitis may be easily overlooked because of absence of rigidity of the abdominal wall. NEVERT (2)

**Balfour, D. G. and McIndoe A. H. Unusual Tumors of the Gastro Intestinal Tract. Surg. Clin. North Am., 1930, 2, 73.**

The authors first report the case of a man seventy two years of age who, ten months previous to examination had begun to have an uneasy rumbling sensation in the right lower quadrant of the abdomen. Increasing weakness was the most marked feature of the complaint. Roentgenological examination of the stomach revealed polypoid tumors at the pylorus, probably benign but possibly carcinomatous. The growths were excised. Pathological examination showed them to be benign pedunculated adenomatous polyps.

Benign tumors of the stomach are relatively rare. The proportion of benign tumors to malignant tumors and ulcerations is as 1:200. Benign tumors constitute 1.3 per cent of all gastric tumors.

The potentiality of these small adenomatous polyps to undergo malignant change appears to parallel rather closely that of the same type of tumor in the colon and rectum (Lockhart Mummery, Dukes and Saint).

A man, aged fifty three years sought advice because of marked weakness from gastro intestinal hemorrhages. A tumor was removed from the upper part of the jejunum. The purpose of presenting this case is to draw attention to one of the possible explanations for obscure secondary anemia.

In the case of a woman aged forty six years who had a moderate secondary anemia roentgenological examination of the stomach revealed a large, ulcerating lesion high in the fundus of the stomach.

which was apparently malignant and irremovable. As the gastric acids were normal and the patient's general condition was excellent, exploration was advised. Operation disclosed an ulcerating lesion of the fundus as large as the palm of the hand which was surrounded by a mass about 8 cm. in diameter. The lesion was considered to be a carcinoma, although the possibility that it was a benign growth was recognized. As it seemed best to treat it as the latter, a jejunostomy of the Witzel type was performed, a No. 20 catheter being used. General exploration revealed no obvious metastasis. The post-operative convalescence was uneventful. The patient was sent home under dietary management and with instructions with regard to the introduction of fluids and nourishment through the jejunostomy tube.

Three months later she returned. Ten weeks after her dismissal, during which time she had experienced increasing difficulty in getting sufficient food through the rather small jejunostomy tube, she noticed the rapid onset of a burning sensation and soreness of the mouth and tongue.

The tongue was beefy red. Both hands were rough and the knuckles were fissured, changes characteristic of secondary pellagra. Gastric analysis at this time revealed total acidity of 20 and free hydrochloric acid of 6. Roentgenological examination of the stomach showed no change in the size of the lesion. The patient was placed on a strict ulcer diet containing brewers' yeast, fruit juice, and beef juice. The feedings were given through the jejunostomy tube and were supplemented by cautious oral administration of nourishment. Within a week the patient showed marked improvement, the glossitis, rectal pain, and dermatitis were disappearing rapidly.

When she returned two months later (five months after the operation) she was feeling very well, the signs of malnutrition had completely disappeared, and she had gained 15 lb. At this time roentgenograms of the stomach revealed the lesion to be only about 1 cm. in diameter. The crater was much shallower and there was increased flexibility of the gastric walls. The benign nature of the lesion seemed to be established.

When, after careful inspection, attempts at removal of a lesion of the stomach are contra indicated, there are in general applicable four procedures: (1) posterior gastro enterostomy, (2) anterior gastro enterostomy, (3) jejunostomy, and (4) partial gastric exclusion.

When the tumor is situated in the fundus, the choice lies between gastro enterostomy and jejunostomy. In the cases of younger patients and when it appears probable that the lesion is benign, jejunostomy offers a good prospect for healing.

The development of avitaminosis or secondary pellagra during the period of feeding through the tube in the case reported can be traced to the fact that the tube was too small in caliber to permit satisfactory handling by the patient herself.

**Holboll, S. A.** The Basal Metabolism of Patients with Cancer of the Digestive Tract. *Acta med Scand*, 1929, LXXI, 475.

Of fifty seven cases of cancer of the digestive tract, fatigue and a loss of weight occurred in almost all, but digestive symptoms occurred in only about a fifth.

In sixteen of nineteen cases, the basal metabolism was found to be increased. There seemed to be a relationship between the increase in the basal metabolism and the stage of development of the disease. The author discusses the possibilities of arriving at an early diagnosis.

LOUIS NEUWELT, M.D.

**Sejhar, G.** Regulation of the Reaction of the Blood in Gastric and Biliary Tract Diseases (Regulierung der Blutreaktion bei Magen- und Gallenweg-Erkrankungen). *Acta chirurg Scand*, 1930, LXXI, 54.

In a large number of his cases of gastric and biliary tract disease the author determined the hydrogen ion concentration of the blood serum with particular regard to the changes in the alkali reserve and the carbon dioxide combining power of the alveolar blood. He draws the following conclusions:

Gastric ulcer is not always associated with a change in the blood reaction. An acid reaction occurs regularly only in advanced cases, in which all other regulating mechanisms show a simultaneous change. In the advanced stages of the lesion the pulmonary regulation is usually affected and its changes have a definite character. Before the regulation reaches its maximum, it decreases and never reaches the expected normal values.

Malignant tumors of the stomach are associated with a definite blood reaction the values of which are high normal or above normal. The other regulatory mechanisms are also strikingly affected. The changes in the ventilation of the lungs are characteristic.

Diseases of the biliary tract cause more or less marked changes in the blood reaction depending upon whether the inflammatory changes involve the liver. The associated disturbances of the regulatory mechanism correspond in their severity approximately to the degree of injury to the parenchyma of the liver.

**Trinchera, C.** The Functional Condition of the Pyloric Part of the Small Pyloric Stomach Isolated by Pawlow's Method (Lo stato funzionale della pars pylorica nel piccolo stomaco pilorico isolato alla Pawlow). *Arch ital di chir*, 1930, XXV, 317.

After the isolation of a small pyloric stomach in dogs according to Pawlow's method the secretion was studied and the stomachs were examined roentgenologically and histologically. The stomachs elaborated a mucous secretion with a slightly alkaline reaction which, when it was acidified with hydrochloric acid, showed a peptic power much less than that of total gastric juice and coagulated milk. It did not bring about any special cleavage of emulsified neutral fats. The secretion of the small pyloric



stomach was continuous and its physicochemical characteristics were constant but the amount was somewhat greater after the ingestion of food and varied directly with the water content of the food. *Histamin* given subcutaneously in a dose not less than 3 mgm greatly increased the amount of secretion without particularly changing its character.

Röntgen examination demonstrated that the muscle tunic of the pyloric part of the stomach had sufficient power to allow quite rapid restoration of normal function.

Histological examination showed that the glands of the pyloric part were made up mostly of chief cells.

On the whole the examinations showed that the function of the pyloric part was chiefly mechanical and protective, the mechanical part was due to the strength of its muscle layer whereas the protective part was due to the abundant production of mucus which by its alkaline reaction, neutralized the excess of hydrochloric acid produced by the glands of the fundus. ANDREW G. MORGAN, M.D.

Weiss A. G. and Guriarran, G. Experimental Chronic Ulcers of the Stomach and Duodenum Produced by Diversion of the Alkaline Duodenal Juices (Ulçères chroniques gastroduodénaux expérimentaux créés par la dérivation des sucs alcalins duodénaux) *Bull et mém Soc nat de chir* 1930 151 8

In fifteen dogs the alkaline juices of the duodenum were diverted into the ileum by section of the duodenum below the site of emptying of the last pancreatic duct and anastomosis between the afferent portion and the ileum. Anastomosis between the pylorus and the efferent loop of duodenum was then done. In all of the animals one or two typical chronic duodenal ulcers developed a few centimeters below the anastomosis. Anatomically they presented the classical picture of rodent ulcer. Their histological structure was identical with that of ulcers seen in man. Clinically they were manifested by emaciation, melana and vomiting sometimes they were associated with signs of perforative peritonitis.

In a series of experiments carried out to determine whether bile or pancreatic juice had the chief influence in the production of the ulcer the choledochus was sectioned between ligatures and a cholecysto-ileal anastomosis was done. One of the three dogs thus treated developed a chronic ulcer of the duodenum immediately below the pylorus and disseminated superficial ulcers over all of the antral region of the stomach. The two others are still living two months and one month respectively after the operation. They are emaciated and pass blood in the stools. Laparotomy on the dog whose operation was performed two months ago failed to reveal ulcer. It is held possible that the blood in the stools is due to irritation of the intestinal mucosa from the absence of bile.

Experiments to abolish secretion of the pancreatic juice by complete resection of the head of the pan-

creas are now under way, but it is yet too early to report on the results. The authors believe it probable that a mixture of bile pancreatic juice and duodenal juice affords the best protection to the mucous membrane against the gastric juice, that the absence of one of these constituents makes the protection less certain, and that suppression of both the bile and the pancreatic juice renders ulcer inevitable.

In a third series of experiments the authors tested the acidity of the gastric juice after diversion of the duodenal juices. They were surprised to find that it was not increased, but they do not conclude from this that there is normally no reflux of duodenal juice into the stomach. They believe that a discrete regurgitation occurs which serves to give the mucous membrane a protective alkaline coating.

The object of a fourth series of experiments was to show that ulcers are produced only on zones of mucosa that have an alkaline secretion. This theory was first advanced by Leriche. To demonstrate the zones the authors used Breckmann's technique of staining the gastric mucosa in the living dog. They remark, however, that a stain is not necessary as the alkaline parts are a pearly white and the acid parts a brownish pink. In most cases the elective localization of the ulcers on alkaline mucosa was evident. The authors believe that the presence of ulcers on surfaces of the stomach that are normally acid can be explained by the existence of small islets of basic intestinal mucosa 'lost' in the mucosa of the fundus. In performing the staining experiment with Breckmann's technique in a clinical case they found that the acid and basic zones were approximately the same as in the dog. The antral region lesser curvature, and cardia were alkaline and the fundus was acid. FLORENCE A. CARPENTER.

Nettelblad A. A Surgically Treated Case of Ulcer Stenosis in a Child Two Years Old (Ein Fall von operierter Ulcusstenose bei einem 2-jährigen Kinde) *Acta chirurg Scand*, 1929 124, 537

A boy two years old swallowed a few cubic centimeters of a fluid which may have been a 10 per cent solution of argyrol, hydrochloric acid or sulphuric acid. Neither on the day of the accident nor later were there any signs of burns on the face or in the mouth or throat. A week after the accident the child began to have attacks of vomiting which gradually increased to such an extent that, five weeks after the accident, he was seemingly unable to retain any nourishment whatever. He then presented all of the signs of pyloric stenosis.

Operation disclosed a circular infiltration of the pylorus which was most extensive anteriorly and sent out streaky radiations—a picture similar to that of pyloric stenosis due to ulcer in the adult. Gastro-enterostomy was followed by recovery.

Williams, H. and Walsh C. H. The Treatment of Perforated Peptic Ulcer. *Lancet*, 1930, ccxviii 9

The authors review 124 cases of duodenal ulcer and 34 cases of gastric ulcer in which perforation

occurred. All of the cases were operated upon in the same hospital, and by the same technique. In no instance was there more than 1 perforation. In 3 cases the perforation recurred.

The median incision was used. The perforation was closed with a single mattress suture and then infolded by a continuous catgut suture transverse to the axis of the bowel. Excision of the ulcer and pyloroplasty was done in 9 cases only. Suprapubic drainage was done routinely except in 3 cases in which closure was effected without drainage. The drain was removed after thirty-six hours.

When the ulcer is large and the induration is so extensive that infolding would cause obstruction at the pylorus, a double tube consisting of an outer perforated No. 22 catheter into which a No. 8 ureteral catheter is threaded is introduced into the stomach about 3 in. from the pylorus. The outer tube is pushed to the site of the obstruction and the inner tube pushed past the obstruction to the second portion of the duodenum. The outer tube allows the escape of gas and fluid from the stomach, and the inner tube serves for the introduction of fluids into the duodenum. Forty cubic centimeters of glucose are given every half hour. The inner tube is removed on the third day and the outer tube after the sixth day.

Primary gastrojejunostomy is an added hazard and in a large percentage of cases is not required. During the past few years gastrojejunostomy was performed as a secondary operation only when the indications were clear. Of 58 cases, secondary gastroenterostomy was performed in 10.

No relationship between the age of the patient and the prognosis was apparent.

The mortality from gastric perforations was 59 per cent (33 per cent when operation was performed during the first six hours and 100 per cent when operation was performed after twelve hours. In the cases of duodenal perforation the mortality was 21 per cent (10 per cent when operation was performed in the first six hours and 50 per cent when it was performed after twelve hours).

HARRY C. SALTZSTEIN, M.D.

Gloja, E. The Technique and Results of Gastroenterostomy and Resection of the Stomach by Tansini's Method (Tecnica e risultati della gastroenterostomia e della resezione gastrica col processo di Tansini). *Ann. ital. di chir.*, 1930, ix, 1.

In Tansini's method of gastroenterostomy and resection of the stomach the use of intestinal clamps is avoided, direct hæmostasis is practiced, a continuous seromuscular Lembert suture in one layer is used, and the mucosa and submucosa are left unsutured. Avoidance of the use of intestinal clamps prevents injurious pressure on the intestine and necessitates direct hæmostasis. The so-called deep hæmostatic suture does not always prevent secondary hæmorrhage. In the method described the serous and muscle coats are incised. Kocher's forceps are applied on each side of the proposed incision of

the mucosa, and after the incision is made the bleeding vessels are ligated with medium sized silk. Care is taken not to include the serosa in the forceps. The suture in one layer shortens the operation time. The mucosa heals perfectly without being sutured. There has never been a death from peritonitis in cases operated on in this way.

Tables are given to show the results in a series of cases operated on by the usual methods and in a series operated on in the manner described. The total mortality was reduced from 26.1 to 7 per cent, that of gastroenterostomy from 22.8 to 5.34 per cent, and that of resection from 38.8 to 21 per cent. However, the simplification of technique was not responsible for all of the reduction. Other factors were the limitation of general anaesthesia, particularly chloroform anaesthesia, the use of the Roth-Drager apparatus when general anaesthesia was necessary, the use of local anaesthesia whenever possible, and careful after treatment including hypodermoclysis and the administration of heart tonics and sedatives for the first few days. The simplification of technique helped to prevent hæmorrhage, shortened the operation, and tended to prevent late complications (there has been no instance of peptic ulcer in the 145 cases operated on by the new technique).

AUREY G. MORGAN, M.D.

Lockhart Mummery, J. P. The Etiology of Diverticulitis. *Lancet*, 1930, ccviii, 231.

As multiple diverticula of the colon occur relatively late in life and as they develop in portions of the bowel known to have been normal previously, it is generally believed today that they are not congenital. In contrast to Spriggs, the author is of the opinion that diverticula of the large bowel are the cause rather than the result of inflammation. In a number of instances, while performing a laparotomy for some other condition, he has observed on the outside of the colon large numbers of projections the size of millet seeds arranged in rows along the longitudinal intestinal bands. He believes that these occur at points where the lymphatics and blood vessels perforate the muscle. He considers them true pulsion hernia of the mucous membrane through the muscular coat. The causative factors are probably age and certain metabolic disturbances. Diverticulosis occurs only in the latter part of life and almost invariably in persons who are obese. Lockhart-Mummery believes that the X-ray evidence of early changes in diverticula, which Spriggs has termed "palsading," might be produced by these numerous small diverticula without any inflammatory involvement, and that inflammation is due to fecaliths retained in the diverticula.

The author distinguishes two types of diverticula. The first is the type in which inflammation occurs over a relatively large area early in the condition and as a result of the inflammatory process a fibrous stricture develops, pericolic adhesions are formed, and the roentgenogram shows evidence of colonic obstruction. It is this type which is usually

diagnosed as carcinoma and in which extirpation is necessary for cure. In the second type which is more common the diverticula develop without any inflammatory change and if inflammation occurs subsequently it develops relatively late.

ALTON OLIVER M.D.

Vallone D. A Plasmocytoma of the Intestine  
(Plasmocytoma dell'intestino) *Ann. ital. di chir.*  
1930, IV, 20.

The case reported was that of a man twenty-four years of age who was admitted to the hospital with colicky abdominal pain and signs of intestinal occlusion. The first attack of pain had occurred four months previously. The patient gave a history of periods of dyspeptic symptoms and alternating constipation and diarrhoea but had had no fever.

Operation showed a tumor protruding into the small intestine and filling about half its lumen. The neoplasm originated chiefly from the connective tissue stroma of the mucosa and submucosa but also to a certain extent from the interstitial tissue of the inner muscle layer. Microscopic examination showed it to be made up largely of plasma cells. The part of the intestine affected was resected in two stages for a distance of about 15 cm. Recovery was uneventful. Three years after operation the patient showed no signs of recurrence.

Only three plasmocytomata of the intestine have been described in the literature. There is a difference of opinion as to whether the tumors are true neoplasms or products of inflammation. The author concludes from the histological findings that the neoplasm in his case was a true tumor. The Wassermann and tuberculin reactions were constantly negative and there were no signs of actinomycosis or any other form of inflammation. The tumor was benign and grew very slowly. *Abstracted from J. Morgagni*

Guibal J. Four Cases of Volvulus of the Small Intestine  
(Quatre cas de volvulus du gr. int.) *Bull. et mem. Soc. med. de chir.* 1929, IV, 2417.

In the first case reported operation was performed three and a half days after the onset of symptoms of acute obstruction of the intestine, attacks of violent pain, bilious vomiting, meteorism and tympany. A large amount of hemorrhagic serous fluid was found in the abdomen and greatly distended purple loops of intestine emerged into the wound. The mesentery was dark red, thickened and infiltrated with blood. When the incision was enlarged it was seen that the root of the mesentery formed a cone with the base resting on the posterior abdominal wall and the apex extending out of the abdomen. The pedicle of the mesentery appeared to be twisted on itself in a clockwise direction. The entire small intestine from the duodenojejunal angle to the terminal portion of the ileum was twisted 360 degrees. As the volvulus was reduced a characteristic gurgling as heard the distended loops collapsed and a large quantity of liquid faeces and gas escaped from the anus. Recovery resulted.

In the second case the first attack which was characterized by vomiting, malaise, and pain in the right iliac fossa and lasted three days was followed by spontaneous recovery. The second attack, in which there was retention of stool and gas, occurred a week later. The symptoms increased, and on the third day the patient was brought 100 kilo meters by automobile to the hospital in intense pain. There was no fever. The right iliac fossa was opened first, but as the appearance of the intestine suggested volvulus laparotomy was done at once. The small intestine, purple and distended, issued from the incisional opening, and in the midst of the distended loops there was seen a band of omentum forming a veritable cord stretched between the transverse colon and a loop of small intestine, to which it appeared to be attached. This band separated the intestinal loops into two bundles, one on the right and one on the left. It was divided between two ligatures but the intestinal loops remained distended. The mesentery appeared to be twisted on itself about 360 degrees. Even after reduction of the volvulus the faecal matter and gas did not enter the caecum. As the ileocecal valve appeared to be impermeable it was decided to establish an intestinal fistula. When the ileum was punctured 20 cm. from the caecum, gas and liquid faeces escaped in large quantities. After two days in which the fistula functioned well, the course by way of the anus became re-established. When the patient was seen again two years later he was in good condition. A few drops still escaped by the old fistula but he refused another operation.

In the third case reported there had been a number of attacks of severe gastric and intestinal pain with vomiting over a period of several years. Appendectomy had failed to give relief. A diagnosis of pyloric stenosis had been made but the patient had refused operation. Shortly thereafter he entered the hospital for urgent surgery, for supposed perforation of the stomach, but the ballooning of the epigastric space, the abundant vomiting and the diffuse nature of the pain ruled the diagnosis to be changed to ileus due to a band of adhesions in the appendicular region. Operation revealed a band in the region of the appendicular peritoneal cicatrix with its deep end attached to the large intestine and volvulus of the small intestine of 360 degrees. Evaluation of the stomach by puncture was necessary before the abdomen could be closed.

In the fourth case there was a history of repeated, localized abdominal crises for the past nine years with appendectomy four years ago. On the third day of the last attack, which was particularly severe, laparotomy was done. Strangulation of the mesentery by torsion on a fibrous band was discovered. The mesentery appeared to be reduced to a cord 0.5 cm. in diameter. Two and five tenths meters of gangrenous bowel were resected. The patient died on the third day.

These four patients were men between twenty-two and fifty years of age.

GREGOIRE, who presented the report for Gubal, recalled that in 1925, in reporting two cases of volvulus in which a peritoneal band was found at the base of the torsion, he suggested that the peristaltic wave of the intestine might give rise to volvulus if it was arrested by such a band. Three of Gubal's cases support his hypothesis.

FLORENCE A. CARPENTER

**Nikitin, A. Resection of 594 cm of the Small Bowel Because of Acute Thrombosis of the Superior Mesenteric Vein (Ein Fall der Resektion von 594 cm Duendarm infolge einer akuten Thrombose der V. mesenterica sup.)** *Nov. chir. Arch.*, 1929, xix, 54.

A forty-four-year old man, in whom 90 cm of gangrenous ileum had been resected following strangulation of its mesentery by a Meckel's diverticulum, was again operated upon six months later for what was believed to be a volvulus of the small bowel of ten hours' duration. At the second operation the loops of the small bowel were found darkly discolored, lusterless, and lifeless, and in places covered with fibrin. There was no volvulus. A hæmatoma 15 cm in diameter involved the whole mesentery from the posterior abdominal wall to the bowel, and the entire ileum presented hemorrhagic infarction. The trunk and numerous branches of the superior mesenteric vein were thrombosed. The superior mesenteric artery pulsed, but its branches did not. Of the entire small bowel, only 30 cm of the first part of the jejunum and 20 cm of the terminal portion of the ileum were intact.

Five hundred and four centimeters of small bowel were resected, which, with the 90 cm previously removed, made a total of 594 cm. After a side to side anastomosis the abdomen was closed. The wound healed by first intention and the patient was discharged well after six weeks. There were then from three to four bowel movements daily. The feces were light gray. On a diet containing 800 gm of carbohydrate, 132.9 gm of fat, and 116.5 gm of protein, the patient felt well and was able to work.

On two occasions, four and four and one half months after the operation, the patient was readmitted to the hospital for a study of his digestion by means of the Schmidt test. These chemomicroscopic analyses showed absorption to be less than normal, the absorption of fat being 57.6 per cent instead of 90 per cent, that of protein, 75.8 per cent instead of from 95 to 97 per cent, and that of carbohydrate, 90 per cent instead of 97 per cent. The feces were always gray-white and did not change following the ingestion of bismuth, tannalbin, or iron. The Schmidt urobilin test of the feces was constantly negative. The fecal reaction on all diets was acid. On the Schmidt and Strassburg tests, the urea and nitrogen contents of the urine were half the normal, but on an unrestricted diet they rose to the normal level.

Five months and eighteen days after the second operation, following an excessive intake of alcohol,

the patient became ill with diarrhoea which was followed in four days by spasms, coma, and death.

Autopsy revealed an embolism of branches of the artery of the Sylvian fossa on the right side. The unresected 50 cm of intestine had become lengthened to 63 cm.

This case shows that the maximal amount of small bowel which may be resected is 90 per cent instead of 80 per cent as stated by Axhausen, that every patient with acute thrombosis or embolism, even of the entire small bowel, should be treated surgically, and that after the removal of 90 per cent of the small bowel, the colon gradually takes over its function.

G. ALIPOV (Z)

**Cirio, L. A Contribution to the Study of Periduodenal Hernia (Contributo allo studio delle ernie interne periduodenali.)** *Arch. ital. di chir.*, 1929, xxv, 34.

The author describes a periduodenal hernia which was found in the case of a man fifty-nine years of age who died of pulmonary tuberculosis. The only symptoms that could have been ascribed to the hernia were abdominal pain and frequent constipation. Elevation of the transverse colon at autopsy disclosed a sac with a thin wall which contained all of the small intestine. The sac was the size of a man's head and occupied a large part of the abdominal cavity below the mesocolon. It was roughly the shape of a kidney with its longest axis oblique from above downward. The upper part was to the left of the midline and at the level of the root of the transverse mesocolon. The lower part extended down to the entrance of the pelvis and toward the right near the cæcum. The opening of the sac was semi-elliptical with its upper two thirds to the left and its lower third to the right of the midline of the body and at the upper right side of the sac. Its maximum diameter was about 5 cm. The loops of intestine could be removed from the sac easily, and there were no signs of compression or strangulation. In the upper anterior wall of the sac there was a vessel which surrounded the lower anterior part of the orifice and was identified as the left colic artery. The upper anterior part of the orifice was surrounded by a vein which proved to be the inferior mesenteric vein. The orifice of the sac was therefore surrounded by the so called arch of Treitz.

The author believes that the orifice of the sac had been displaced secondarily, but he was unable to determine its original site. He saw no evidence of a congenital origin, but concludes that a congenital factor is present in the majority of cases.

AUDREY G. MORGAN, M.D.

**Vorhaus, M. G. Recognition of Some of the Less Common Diseases. Duodenojejunal Diverticula, Mucocoele of the Appendix and the Cæcum.** *J. Am. Med. Ass.*, 1930, xciv, 165.

A duodenojejunal diverticulum was first described by Chomel in 1710. In 1913, Case first reported the diagnosis of duodenal diverticulum by the X rays.

The X ray diagnosis depends upon the finding of a barium filled pouch in the upper intestinal tract several hours after emptying of the barium from the stomach and duodenum.

From the few cases which have been reported it is apparent that duodenojejunal diverticula may exist without causing symptoms. Symptoms are probably caused by stasis in the pouch or partial or complete obstruction produced by the pouch.

The author reports two cases of duodenojejunal diverticulum. The patients complained of attacks of pain in the epigastrium which occurred after eating radiated slightly upward and were often of a colicky nature. Induced vomiting or the use of a strong saline laxative gave relief. On physical examination, a focal point of tenderness in the epigastrium to the left of the midline was found. The findings of examinations of the gastric secretions, blood, urine, and feces were normal.

A barium meal revealed no abnormalities until after the stomach and duodenum were empty, when an opaque pouch was seen at the level of and to the left of, the third lumbar vertebra. At the twenty-four hour observation the pouch was empty. Both patients were operated upon and recovered.

Vorhaus reports also a case of mucocele of the appendix and caecum. Mucocele of the appendix was first described by Virchow in 1863. Since then it has been described frequently but little has been added to the symptomatology. In many instances it has been incorrectly diagnosed as acute appendicitis, retroperitoneal tumor, carcinoma ovarian cyst, and irreducible hernia. The only reference in the literature to the use of the X rays in the diagnosis was made by Simon. In the author's case the diagnosis was established before operation by clinical and roentgenographic observations. The patient was a woman forty six years of age. When she was first seen in May 1927 she complained of vague abdominal distress. Roentgen examination showed no filling of the caecum or appendix, and physical examination revealed tenderness over McBurney's point but no rigidity or palpable mass. In October 1927, the patient had a severe attack of pain in the right lower quadrant of the abdomen accompanied by nausea and vomiting. Examination then revealed a small round mass in the right lower quadrant but no rigidity. The next day the mass disappeared and the patient felt well. Three such attacks occurred in a month all associated with a palpable mass which disappeared the next day. The highest leucocyte count during the attacks was 11,000.

In November in an interval between attacks gas ro-intestinal roentgen studies were made. The barium meal revealed no definite pathological condition, but barium-enema studies disclosed an extensive filling defect of the lower caecum and a very large, irregularly filled appendix.

The patient refused operation. Subsequently the attacks became more severe and the mass in the right lower quadrant increased in size and persisted for two or three days.

In February 1928, barium enema studies showed the same filling defect in the lower caecum and appendix, but the feathery appearance of the defect was replaced by irregular mottled shadows.

At operation performed in March, 1928, a large mucocele of the appendix and caecum was removed. It was attached only at its base. The operation was followed by complete recovery. Barium enema studies made a year later revealed no abnormalities of the caecum. The patient was entirely well.

The conditions generally believed to be necessary for the development of mucocele of the appendix may be summarized as follows:

1. There must be complete or almost complete stenosis of the lumen, else with the increasing distention the fluid will be forced out.

2. There must be complete absence of pathogenic micro organisms, else empyema or gangrene will result.

3. Mucus must be secreted in excess of its absorption else distention will not occur.

The author reports a case of intermittent mucocele in which the stenosis of the lumen though complete subsided after a time with complete collapse of the tumor. The fact that barium entered the tumor in this case proved that mucocele may occur even in the presence of bacteria. J. EDWIN HIRKPATRICK, M.D.

Ritvo, M. The Roentgen Diagnosis of Lesions of the Jejunum and Ileum. *Am J Roentgenol*, 1930, xxiii, 160.

Following a brief description of the technique of roentgen examination of the small intestine and the findings in normal persons, Ritvo discusses the pathological conditions in which the roentgen ray may be of diagnostic aid. The lesions considered are obstruction, hypermotility, diverticula, malpositions and displacements, adhesions, tuberculosis, ulcers, neoplasms, foreign bodies and postoperative changes.

In obstruction it is possible to determine the degree of obstruction and also, in many instances, to localize the site of the lesion. This may be done by observation of the gas distended loops of small bowel or preferably, by examination after the administration of an opaque meal. Dilatation of the loops associated with retention is indicative of obstruction. Hypermotility is revealed by unusual rapidity of progress of the meal and its presence may suggest such local lesions as ulceration, a tuberculous lesion or a general process.

Diverticula are indicated by one or more localized pouches which may retain their contents for variable periods. Malpositions and displacements are easily demonstrable and frequently the X ray shows the probable causes of such abnormalities. Hernia may contain portions of the small bowel. Elevation and separation of the loops may result from ascites. Adhesions may cause fixation, abnormalities of position and changes in the size and contour of the intestine. In tuberculosis irritability with hypermotility and filling defects are the most common findings. Tuber-

culous peritonitis occasionally causes diffuse adhesions and multiple, irregularly scattered strictures of the small bowel

Ulcers are very difficult to diagnose. They usually cause narrowing of the lumen. The demonstration of a niche in the strictured area makes the diagnosis certain. Neoplasms do not cause constant roentgenological findings, but may be suggested by narrowing of the lumen or obstruction. The presence of opaque foreign bodies in the small intestine may be determined with the aid of an opaque meal. In rare instances, a non opaque body may be detected.

The study of the small bowel after operation is of importance. After gastro enterostomy, roentgen studies should be made to check the site and functioning of the stoma. Poor function may show itself as delay in emptying or, more frequently, too rapid emptying. Jejunal ulcer and the presence of a vicious circle may also be determined by roentgen examination. Postoperative adhesions may cause narrowing of the lumen, fixation, and displacement of the loops of small bowel. After ileocolostomy, roentgen studies with the opaque meal and barium enema are very important to check the site and functioning of the anastomosis. In cases of colectomy, the small bowel distends and to a certain extent may take on both the form and the function of the colon.

ADOLPH HARTUNG, M D

Sjovall, S. A Surgically Treated Case of Hirschsprung's Disease (Ein operierter Fall von Hirschsprung'scher Krankheit) *Acta chirurg Scand*, 1929, lxx, 568

In the case reported, that of a boy thirteen years of age, a dilated sigmoid flexure was resected with a good result. Before the resection, an appendicectomy was done and the intestine repeatedly washed out.

Lundblad, O. Diverticulitis Sigmoiditis, with Particular Regard to Its Treatment (Ueber Diverticulitis Sigmoiditis mit besonderer Berücksichtigung der Behandlung) *Acta chirurg Scand*, 1929, lxx, 590

The author reports four cases representing different types of diverticulitis of the sigmoid flexure and discusses the treatment. For cases of simple inflammation he advises conservative internal treatment, and for cases with suppuration, the most conservative surgical intervention possible, i.e., simple drainage supplemented, if necessary, by extirpation of a perforated diverticulum. He states that resection should be considered only for cases with more serious complications such as stricture of the intestine.

Bargen, J. A., Copeland, M. M. and Rankin, F. W. Tuberculosis of the Sigmoid Colon Simulating a Primary Malignant Lesion. *Ann Surg*, 1930, xci, 79

Tuberculous lesions primary in the colon have been reported. Their most common site is the ileo-

cæcal region. Tuberculosis of the sigmoid colon is one of the rare forms of tuberculosis of the colon. The authors report two cases in which several observations suggested that the primary lesion was in the sigmoid. The surgeons who performed the exploration noted that the greater bulk of the lesion was in the lower left part of the abdomen. Obstruction occurred in the sigmoid colon, and the absence or scantiness of bleeding in the presence of a large obstructive lesion argued against the presence of a malignant condition. While the roentgenographic defects suggested malignancy, Rankin and Yeomans had previously noted that the defects produced in the roentgenogram by tuberculosis and malignant lesions are similar. The absence of tuberculous lesions elsewhere than in the sigmoid colon was noteworthy.

Pincoffs and Boggs noted that in tuberculosis of intra abdominal origin, masses of tuberculous nodules will occur in various places and that there is more matting of viscera than in tuberculosis of distant origin. These conditions indicative of the intra abdominal origin of the process were present in both of the cases reported by the authors.

Bloodgood has called attention to the significance of leucocytosis in the diagnosis of obstruction by tuberculosis and has emphasized the unfavorable prognosis in the majority of such cases.

The absence of lesions in the rectum and recto sigmoid portion of the colon, which was noted on proctoscopic examination in the authors' cases, argued against the presence of an ulcerative type of lesion, and the absence of deformity and of defects elsewhere in the colon was evidence against the presence of tuberculosis of the proximal portion of the colon and an indication that the disease was of the hyperplastic type.

The peculiar feel of the abdominal wall noted on palpation in both of the cases and the associated tuberculous peritonitis were significant.

## LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Pribram, B. O. Residual Hepatic Disturbances After Gall-Bladder Operations (Die hepatischen Residualbeschwerden nach Gallenoperationen) *Deutsche med Wchschr*, 1929, li, 1768, 1801

Pribram operated upon 305 cases of cholelithiasis with a mortality slightly under 3 per cent. He attributes his success to his method of operating, careful peritonization of the bed of the wound, and primary closure. However, the number of patients who suffer disturbances after gall-bladder operations is still large. Pribram offers an explanation for such postoperative disturbances.

He states that, as in appendicitis, the prognosis with regard to permanent cure is better when the operation is done during an acute attack than when it is done in a latent period after the symptoms have subsided. The general custom of waiting for the

interval is associated with the danger of extension of the infection to the liver and pancreas which is the chief cause of the postoperative residual manifestations so difficult to treat

Many of the colics occurring in cases of cholelithiasis particularly those which occur with a rapid onset of icterus are to be considered hepatic colics and not true stone colics. These often occur before the operation and frequently are not completely corrected by the operation. They are therefore designated more rationally as residual colics and disturbances than as recurrences.

The same is true of pancreatitis. In a manner similar to that in which a hepatitis occurs as the result of infection through the lymphatics and the portal vein, a primary parenchymal injury of the pancreas occurs. The associated flooding of the blood with diastase is comparable to the occurrence of icterus catarrhalis which is also due primarily to cell injury. In this condition also there are extensive adhesions in the vicinity associated with a simultaneous increase in the diastase whereas the gall bladder itself no longer shows any noteworthy inflammatory changes. These are the cases with frequent residual manifestations. They give the impression of a subacute or chronic insidious infection which without any definite primary site has involved the entire upper abdomen. The mildest inflammations produce the most marked adhesions, whereas purulent reactions may proceed without the formation of adhesions. The serosa irritated superficially by mild stimuli becomes extensively and permanently adherent to its surroundings.

The pathologico-anatomical bases of the hepatitis are often indistinct. There is an accumulation of lymphoid cells about the intra-acinous biliary passages. Clinically hepatitis is associated with a lowered fat tolerance which is independent of the amount of bile secretion and may be considered a true symptom of the condition. In support of his views Pribram cites several cases in which a febrile hepatitis developed after the ingestion of a diet rich in fat and was relieved only by operative treatment, medical management having no effect on the septic condition. He believes that the infection in these cases was maintained by the vicious circle resulting when the colon bacilli which entered the duodenum with the bile were returned again to the liver by way of the portal vein.

The treatment of hepatitis and perihepatitis includes two modes of procedure: diet and irrigation. In addition Pribram has been giving thyroid preparations particularly thyrotoxin to detoxicate the liver. After this treatment he has repeatedly noted improvement in the symptoms and an increase in the fat tolerance. The thyroid secretion increased the function of the organs and brought about a parenchymal regeneration. The author noted favorable results also from the administration of raw liver in the anemias resulting from septic cholangitis.

In conclusion, Pribram emphasizes again that operation during an acute attack gives the best end

results and delay of operation until a period of latency is associated with the danger of insidious extension of the infection to neighboring organs the chief cause of the residual manifestations which are so difficult to cure. LOERER (2)

Fuentes B Y Munilla A, and Duomarco J. Neutral Fats and Glutathione in the Liver in Experimental Icterus Due to Obstruction (*Las grasas neutras y el glutatión reducido del hígado en la ictericia por obstrucción experimental*). *Rev Asoc med argent* 1939 xlii 659

In the liver of white rats, the total fats determined by the Kumagawa Suto method were reduced to half their normal value when the common duct was occluded. In one half of the number of rabbits experimented upon in the same way, the total fats were reduced 30 per cent. In dogs there was no appreciable change. The reduction in the neutral fats was accompanied by an even more intense reduction of the glycogen.

When in dogs only one hepatic duct was ligated, the fat increased in the lobe with the patent excretory duct.

In white rats the glutathione of the liver increased progressively after ligation of the common duct but in dogs it was not changed under these conditions. In rabbits, it was always greatly increased. When, in dogs, the excretory duct of a lobe of the liver was ligated it was reduced by 30 per cent in that lobe. ALDREY G MORRAN, MD

Chiray M and Lomon A. Contraction of the Gall Bladder Photographed 'in the Aet' (*La contraction de la vésicule biliaire prise sur le fait*). *Presse méd*, Par 1939 xxxvii 1605

In three cases the authors saw the contraction of the gall bladder take place before their eyes and roentgenograms were taken which showed the phases of the contraction. The contraction was completed in two or three seconds. In the first case the gall bladder was orthotomic and was clearly visible on roentgenoscopy. A powerful contraction occurred which emptied the gall bladder of half its contents in less than one minute. The passage from the state of repose to that of contraction appeared to be almost instantaneous. The fundus of the bladder contracted while the body became cylindrical and the bile was forced from the fundus toward the neck. In less than a minute the shadow of the bladder had diminished by half and had returned to the shape of the organ in repose.

In the second case the contraction was as energetic as in the preceding case, but more prolonged. It continued until the shadow of the gall bladder had completely disappeared. The first plate showed a bladder of average dimensions, pear shaped with a rounded fundus. An air bubble could be seen in the vicinity of the neck at the site of the genu superior. On the second plate taken about a minute later and at the moment when the stomach had just been filled with a mixture of barium, milk, and chocolate

the bladder had become cylindrical by evacuation of bile from the fundus toward the neck and had diminished in size by one-half. The succeeding pictures were taken at intervals of thirty seconds. The first showed that, by pressure, the walls of the bladder had deformed the right border of the antrum. The rest show the shadow of the bladder diminished and finally effaced.

In the third case the gall bladder was atonic. The contraction followed pain produced by pressure of the examining finger. As the contraction in this instance was insufficient to force the spasm of Oddi's sphincter, evacuation did not take place. The phenomena shown in the roentgen pictures resembled those seen in atonic stomachs struggling with infrequent contractions against spasm of the pylorus.

The article is illustrated with fourteen roentgenograms. A lengthy review of experimental work with regard to contractions of the gall bladder precedes the report of the authors' original research, and an extensive bibliography is appended.

FLORENCE A. CARPENTER

Kaspar, F. External Choledochoduodenostomy  
(Ueber die Choledochoduodenostomia externa)  
*Deutsche Zeitschr. f. Chir.*, 1929, CCXX, 91

The author describes the technique of external choledochoduodenostomy in detail and recommends the operation enthusiastically. He states that when the conditions are favorable for its performance (sufficient diameter of the biliary tract, etc.) it is not difficult technically. It is indicated in cases of stenosis of the papilla with a rather large collection of stones extending into the intrahepatic ducts, cholangitis, extensive stricture formation at the end of the common bile duct, chronic pancreatitis, and inoperable tumors occluding the common bile duct.

There is no danger of biliary stasis and infection of the biliary tracts from the duodenum as the result of the operation. The postoperative course is usually smooth, and the patient is restored to health rapidly. The immediate mortality is 2.6 per cent, which is very low when one considers that the operation is generally performed on patients who are seriously sick. The permanent results are very favorable, complete cures having been maintained in cases under observation for years.

E. KOENIG (Z)

Zagni, L. The Influence of Lumbar Sympathectomies and of Ablation of the Stellate Ganglion of the Sympathetic on the Regulation of the Blood Sugar by the Pancreas (De l'influence des sympathectomies lombaires et de l'ablation du ganglion étoilé du sympathique sur la fonction glycogénolysante du pancréas). *Lyon chir.*, 1929, XXVI, 788

The amount of sugar in the blood appears to be the chief factor maintaining the equilibrium between the quantity of sugar utilized in the tissues and the mobilization of glycogen in the liver, on the one hand, and the quantity of carbohydrates and their retention in the liver in the form of glycogen, on the other hand. Therefore, in the investigations

reported in this article, the blood sugar was taken as the index of the disturbances in this equilibrium. The experiments were made on dogs which were given normal alimentation.

Zagni found that partial or total ablation of the lumbar sympathetic chain always resulted in an increase in the blood sugar which lasted about a month. Traces of glycosuria were noted in the first few days after the operation in only one of the two dogs. The daily output of urine was from 600 to 800 gm. Polyuria did not occur. In one dog, a median laparotomy was performed and both lumbar sympathetic chains were stimulated with a No. 3 Ruhmkorff bobbin for five minutes. Hyperglycæmia, polyuria, and glycosuria failed to occur. In experiments on rabbits, Rose and Schenck noted an increase of the blood sugar following simple opening of the abdomen. Of three dogs in the author's experiments in which the stellate ganglion was ablated, the two that did not survive presented hyperglycæmia immediately after the operation. In the third animal the blood sugar fell from 1.27 before the operation to 1.04 and then progressively to 0.55 per thousand, where it remained. In two dogs subjected to partial pancreatectomy followed by sympathectomy of the pancreaticoduodenal artery, the glycæmia increased after the second intervention. In one of these dogs, in which the sympathectomy was not well done because of hemorrhage from the pancreas at the level of the hilum, the hyperglycæmia was excessive (3.43), but the next day, ten hours before the animal's death from peritonitis, there was a hypoglycæmia (0.60 per thousand). In one dog the order of the operations was reversed, the sympathectomy of the pancreaticoduodenal artery preceding the partial removal of the pancreas by forty-eight hours. After the first operation the blood sugar increased from 0.80 to 0.90, and after the second operation there was a transient slight hyperglycæmia.

From these experiments the author concludes that the center regulating the blood sugar and, in consequence, the carbohydrate metabolism, are influenced through the abdominal or cervical sympathetic, probably through the activity of a highly complicated neurohormonal mechanism, this constituting another indication of the close functional relationship between the sympathetic nervous system and the glands of internal secretion.

The movements of the blood-sugar level in the different experiments are shown by graphs.

FLORENCE A. CARPENTER

Buonsanti, P. Splenomegaly with Chronic Congestion and Gamma's Nodules in a Case of Active Hereditary Syphilis (Splenomegalia con fatti di cronica stasi e noduli di Gamma ereditale tipo florido). *Arch. ital. di chir.*, 1929, XXV, 1

The case reported was that of a girl twenty years of age. A diagnosis of syphilitic splenomegaly was made and splenectomy was performed. The patient died four days after the operation. Autopsy showed thrombophlebitic splenomegaly, gummata in the



liver, marked degeneration of the myocardium, and thrombosis of the trunks of the portal and splenic veins. The postoperative thrombosis had evidently developed from an old phlebitis.

The author reviews the literature regarding the cause and significance of Gamna's perivascular nodules and reports three experiments in which an attempt was made to produce them in dogs. Ligation of the veins was followed in about four months by tumor formation with a pathological picture closely resembling that of thrombophlebitic splenomegaly in man, but no Gamna perivascular areas resulted. The author believes that these areas are caused not by a mycosis but by a collagenous necrobiosis which, in the case reported, was brought about by the syphilitic infection.

AUDREY G. MORGAN, M.D.

### MISCELLANEOUS

Grube, E. *Experimental Studies of the Distribution of Fluids in the Abdominal Cavity* (Experimentelle Untersuchungen ueber die Verteilung von Fluessigkeiten in der Bauchhoehle). *Deutsche Zeitschr. f. Chir.* 1920 CCXIII 386.

The author reports studies of the distribution of fluids in the abdominal cavity which were carried out on rabbits. When umbrenal which has the same specific gravity as water was injected into the small pelvis or under the diaphragm and the rabbit was suspended by his head or hind legs or laid in a horizontal position, it was found by repeated X-ray ex-

aminations that the contrast fluid remained at the site of injection for several hours until it became absorbed. After about four hours it disappeared. Then, regardless of the position of the animal there occurred a gradual extension of the shadow toward the diaphragm which was apparently produced by the lymph flow (sucking action of the diaphragm during respiration). From these findings it is evident that the distribution in the abdominal cavity of a fluid of about the specific gravity of water is not determined by the laws of gravity and is not influenced by the position of the body.

The results following the introduction of relatively heavy fluids such as iodipin were entirely different. Always within an hour, the oil gravitated to the dependent portions of the abdominal cavity, toward the diaphragm or pelvis, depending on the site of injection and the position of the body.

Fluids of middle weight were distributed independently of position and gravity, whereas heavy fluids sank to the lowest portions of the cavity, their distribution being dependent on the position of the body.

As the fluids formed by the body in inflammations—exudate and pus—are of middle weight, their distribution is independent of body position. Therefore even in non-encapsulated purulent infections of the abdominal cavity the most comfortable position, i.e. elevation of the pelvis may be employed during operation without hesitancy, and in the after treatment of peritonitis it is not necessary to keep the upper part of the body elevated. *Disch. (Z)*

# GYNECOLOGY

## UTERUS

**Bovin, E** Symptoms of Myomata of the Uterus During the Menopause *Acta obst et gynec Scand*, 1930, 15, 90

Of 300 cases of uterine myomata for which operation had been performed, 4.3 per cent were those of women between the ages of fifty-four and eighty-two years in whom, as shown by the operation and the result, the myomata had given rise to symptoms subsequent to the menopause which had persisted for many years. In 8 cases there was hæmorrhage. One patient with hæmorrhage, who was sixty years old, had passed the menopause eight years previously after treatment with the roentgen rays. In 1 case, a myomatous polypus the size of a tangerine orange was associated with a small adenocarcinomatous growth in the fundus. Four patients had symptoms of growing myomata with or without bleeding. In 2 cases, severe pressure on the bladder or rectum was caused by calcification occurring in the neoplasms. Also in 2 cases, œdema or necrosis of the tumors developed.

The author states that cases such as these should be borne in mind in discussions of operative versus irradiation treatment of uterine myomata. They indicate that even after the menopause has been brought about by irradiation, the remaining myomata may cause troublesome symptoms in the future.

**Davanzo, I** Bacterial Flora of the Fibromyomatous Uterus (Sulla flora batterica degli uteri fibromiomatici) *Riv ital di gynec*, 1929, 2, 478

In an examination of the bacteria flora in twenty-nine cases of fibromyoma of the uterus, the author found different forms of microorganisms—cocci, bacilli, or fungi—in nineteen cases. In most instances they came from the vaginal flora. Davanzo believes that the classification used by Maunu and Heurlin for the different degrees of bacterial cleanliness of the vagina may be applied to the uterus also. In the first degree there is absolute cleanliness, in the second, a few saprophytic bacteria, and in the third, various forms of cocci. He states that the immigration of bacteria into the uterus is not caused by regressive changes in the fibromyomatous uterus, such as hyaline degeneration or necrosis, and that their presence in the uterus may not cause any secondary changes in the endometrium or the tumor nodules. The tumors become infected only under exceptional conditions such as when they are submucous and, in addition to causing patency of the cervix, cause changes by traction or pressure which affect the nutrition of the endometrium.

AUDREY G. MORGAN, M.D.

**Boijse, O. A.** Principles in the Treatment of Myomata (Richtlinien bei der Myombehandlung) *Acta obst et gynec Scand*, 1930, 15, 74

This article is based on 400 cases of myoma, 128 of which were treated by roentgen irradiation and 272 by operation. In the first group the primary result was favorable, but there were 2 deaths. In the 2 fatal cases, in both of which there was a sarcoma, the findings of curettage were negative. The mortality in Group 1 was therefore 1.5 per cent. Of the surgically treated cases, enucleation was done in 84 and supravaginal amputation in 188. In this group also there were 2 deaths, but they were not due to the treatment. One of them occurred on the fourth day after the operation from cardiac failure and the other was due to cerebral hæmorrhage. The mortality in the second group was therefore 0.7 per cent.

The author has more and more extended the indications for operative treatment and now uses roentgen treatment only when operation is contra-indicated. His choice of treatment is based not so much on the favorable results of operation as on the frequency of serious symptoms following the destruction of ovarian function by the roentgen ray. He performs an amputation, not a total extirpation. When amputation is not suitable, he does an enucleation.

**Heyman, J** Radiology as a Complete or Partial Substitute for Surgery in the Treatment of Cancer of the Female Pelvic Organs *Surg, Gynec & Obst*, 1930, 1, 173

In cases of cancer of the cervix, radiological treatment at Radiumhemmet has given results as good as, or better than, those obtained by surgery as reported in the literature. An absolute cure was obtained at Radiumhemmet in 20.6 per cent of the cases, whereas in surgically treated cases reported in the literature an absolute cure was obtained in 19.1 per cent. Radiological treatment seems to be most effective in operable cases. Heyman believes that in carcinoma of the cervix, operation should be done only when radiological treatment fails.

The statistics of Radiumhemmet show that in operable cases of carcinoma of the body of the uterus, radiological treatment resulted in a cure in 50 per cent, whereas in surgically treated cases reported in the literature a cure was obtained in 58 per cent. Heyman concludes that operable cases should be treated by surgery followed by irradiation. In borderline cases he individualizes the treatment. He states that surgical treatment is to be preferred when the uterine cavity is large and irregular, and radiological treatment when the uterine cavity is narrow and regular. Inoperable cases of cancer of the body of the uterus should be treated by irradiation.

In cancer of the vagina, operation should be entirely superseded by irradiation

In cancer of the ovary, removal of the tumor should be tried and followed by radiological treatment. Radiological treatment will bring about considerable improvement and may render subsequent operation successful. T. FLOYD BELL, M.D.

Chueco, A. Manipulations for Exteriorization of the Uterus in Conservative Operations Performed by Colpotomy (Manipobras de exteriorización del útero en las intervenciones conservadoras a realizar por colpotomía) *Semana med.*, 1929 xxxvi 1642

Exteriorization of the uterus at the vulva is one of the difficulties that it has been necessary for advocates of vaginal operation to overcome. The size of the opening in the vagina required for the exteriorization of the uterus and adnexa must be determined and it is necessary to know whether the uterus and adnexa are free and reducible and whether the broad ligaments are distensible enough for exteriorization. Gynecological examination will show the size of the field of operation combined vaginal and external palpation will reveal the size, position, mobility, and consistency of the organs, and traction on the cervix will demonstrate the extent to which the ligaments can be stretched.

When it has been found possible to exteriorize the uterus a colpotomy generally an anterior colpotomy is performed. The anterior os is caught with special forceps which have little buttons on the ends to prevent injury to the uterus and are curved in such a way that they will not obstruct the view. The vaginal mucous membrane is incised along the whole length of the cervix, the line of cleavage for dissecting the bladder free is found, and the whole anterior wall of the uterus is exposed. If the incision is not large enough another incision is made across it. In order to prevent injury to the uterine artery, these manipulations must be confined to the anterior surface of the uterus. The forceps are then changed from the anterior to the posterior lip of the os and the patient put in an exaggerated Trendelenburg position to get the intestines out of the way.

The author describes various instruments used for exteriorization of the uterus and illustrates the instrument he prefers a sort of curved retractor with a broad blade which does not injure the tissues. He emphasizes that simplification of instruments is desirable. He states that in some cases the uterus has been exteriorized by a see saw movement with the use of only the index finger and the forceps in the posterior lip of the os. AUDREY G. MORGAN, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Ahlstrom, E. A Case of Actinomycosis of the Adnexa of the Female Genitalia (Ein Fall von Aktinomykose in den Adnexen der weiblichen Genitalien) *Acta obst. et gynec. Scand.*, 1930 ix 1

The author reports a case presenting an actinomycotic tumor of the left ovary, with which the

tube had evidently fused, abscesses of smaller size in the adjacent parametrium, empyema on the right side, invasion of the diaphragm, subphrenic abscess and abscesses of various sizes in the liver. He then discusses the pathological anatomy and clinical features of actinomycosis of the female genitalia on the basis of this case and sixty-one cases reported in the literature.

He states that it is often difficult to determine the mode of origin of infection of the female genitalia but that in most cases the infection probably begins in the intestine. Ascending infection doubtless occurs in only a few cases such as those in which the condition becomes evident after a criminal abortion. In some cases, however, it can be explained only on the basis of metastasis by way of the blood stream. In the author's case it probably originated in the pleura or lung.

The prognosis is unfavorable. No instance of long standing cure has been reported, although in one case the patient remained well during observation for two and a half years.

With regard to the treatment the author states that in the relatively rare cases in which the process is limited to the adnexa it seems advisable to attempt to extirpate the tumor, but in cases in which the infection has spread to the pelvic connective tissue it is probably better to try roentgen treatment supplemented by potassium iodide medication and incision and evacuation of the actinomycotic masses. While roentgen treatment has seldom been applied to actinomycosis of the genital organs, its relatively favorable results in the treatment of actinomycosis in other locations, even the abdominal form, indicate that it may improve the prognosis of the former condition.

Faure, J. L. Aggravation of Ovarian Tumors by Radiotherapy (Sur l'aggravation des tumeurs de l'ovaire par la radiothérapie) *Bull. Soc. d'obst. et de gynec. de Par.*, 1930, xix, 43

A woman forty five years of age received three roentgen treatments, a week apart, for uterine fibroma. The first exposure lasted forty minutes but the length of the subsequent exposures is not stated. The first treatment was not well borne and was followed in a few days by enlargement of the abdomen. After the second treatment, the patient complained of great fatigue, and at the time of the third treatment slight signs of ascites caused the radiologist to hesitate before making the exposure. When the patient presented herself for the fourth time ascites was clearly evident, the abdomen was greatly enlarged and it was obvious that her condition had become worse. The radiologist sent her home and the next day Faure was called to see her.

At operation, Faure found abundant ascites and a uterine fibroma with several nodules flanked on both sides by an ovarian tumor the size of a fist which was partly cystic, and partly solid. The uterus and adnexa were removed with ease and as no growths of any sort were noted on the intestines or pelvic walls, a definite cure is expected.

Faure is convinced that the sudden aggravation of the tumors was caused by the exposures to the roentgen rays. In support of his opinion he cites an earlier case in which roentgen irradiation for supposed fibroma of the uterus was followed by enlargement of the tumor. When he was consulted in this case he expressed the belief that the tumor was a cyst of the ovary. At operation, he found the left ovary transformed into a cyst as large as an adult's head and closely adherent to the uterus and broad ligament. The interior of the cyst was completely filled with papillary vegetations bathed in a small quantity of milky fluid. Faure had never seen similar vegetations, they were not less than 8 or 10 cm long. Four months later the patient died following enlargement of the glands on the side opposite the primary cyst. This ovarian cyst behaved like the worst of cancers. Faure cites also a third case of a similar nature. He is convinced that radiotherapy can have a disastrous effect on ovarian cysts, and emphasizes that a pelvic tumor should not be irradiated until the radiologist is absolutely certain that the neoplasm is a fibroma and is not accompanied by an ovarian cyst.

In the discussion, BECLRE maintained that Faure had not proved the connection between the malignant transformation and the irradiation.

Brocq stated that scientific proof of malignant transformation of a benign tumor of the ovary is not possible at the present time and that it is not always easy to determine the prognosis of an ovarian tumor even from histological sections. He believes that in doubtful cases roentgen therapy should be given very cautiously and that surgery should be resorted to without further delay if a distinct diminution in the size of the neoplasm is not apparent after two or three treatments. FLORENCE A. CARPENTER

### EXTERNAL GENITALIA

Faltin, R. Two Cases in Which a Vagina Was Formed Artificially (Zwei Faelle von kuenstlicher Scheidenbildung). *Acta obst et gynec Scand*, 1930, 13, 124.

In the first case reported the author (like Ruge, but about a month earlier) used a part of the sigmoid flexure to form a new vagina. The results were still excellent after sixteen years.

In the second case a loop of ileum was employed. The bringing down of the loop to the vulva was not successful. Transverse section of vessels in the mesentery was followed by sloughing of the transplanted intestine, peritonitis, and death.

Faltin concludes that the large intestine is preferable to the small intestine for an artificial vagina.

Wichmann, S. E. Three Cases of Vaginal Aplasia Operated upon by the Schubert Technique (Drei nach Schubert operierte Faelle von Aplasia vaginae). *Acta obst et gynec Scand*, 1930, 13, 661.

The first case reported was that of a girl eighteen years of age who had been married three months.

The patient suffered severe pain at coitus and had developed partial urinary incontinence. The urethra was considerably dilated. After the operation the function of the bladder and intestine was entirely normal and there was complete voluptas sub coitu. The time of observation was about two years.

The second case was that of a woman twenty-four years of age who was engaged to be married. The operation was followed by parotitis infection of the wound region and a rectovaginal fistula. The fistula was closed by a secondary operation. Coitus was rendered possible, but there was no voluptas. The function of the bladder, levatores, and anal sphincter was as good as before the operation. The time of observation was eighteen months.

The third case was that of a woman twenty-two years of age who was engaged to be married. The operation was followed by quick recovery without complications. The final result was satisfactory, but there was no postoperative coitus. The time of observation was about a year.

The author compares Schubert's method with other operations. He states that only the Schubert and Faltin Ruge procedures can be relied upon to give a good result and to be associated with a low mortality (3 per cent). The mortality of the Baldwin, Mori, and Haebelin plastics of the small intestine and Popoff's rectal plastics have a mortality of from 16 to 20 per cent. Moreover they are frequently followed by unfavorable sequelae such as fistula and by poor end results.

Because of the marked disturbances in the development of the urinary organs which are associated with aplasia of the vagina, the author emphasizes that the development and topography of these organs especially the ureters, should always be determined by roentgenography before operation is attempted. The condition and position of the rectum and sigmoid should be similarly determined.

Bazala, V. Plastic Operations on the Vagina (Neo plastica vaginae). *Lyce vyesnik*, 1929, 11, 357.

The first plastic operation on the vagina was performed at the beginning of the nineteenth century for hæmatometra. Later, plastic operations were done in cases of complete absence of the vagina. The attempt was made to form a canal between the bladder and rectum and keep it open by tamponade or glass or metal tubes. The canal soon became narrower and shorter and the end-result was a failure. Not much better were the results with autotransplantation (Bumm), homeoplastic operations by the Kuestner and Mackenrodt technique, and the heteroplastic method of Sitsinski.

Pfannenstiel chose the abdominal route and in cases in which there was a uterus which could be used as a fixed point for the attachment of the rudimentary vagina he obtained very good results. Actually, however, no plastic operation was performed except in a case in which Rein performed a similar operation by the vaginal route. Traenkel, Frank, and Geist returned to the flap operation.

This procedure they improved and modified, although not with complete success. Ott, Stoeckel, and Kroeber attempted to cover the newly created canal with peritoneum, but by this method only Dreyfus (1912) obtained a good result. Gerszay, in 1897, was the first to form a new vagina from a portion of the anterior wall of the rectum. Moskowicz and Amann used the entire anterior wall. Amann, in 1912, claimed that, if necessary, the entire lower portion of the rectum could be employed. In 1891, Sniegrefski used the entire rectum. He first made a sacral anus and two weeks later split the anal sphincter almost up to the urethra and then sutured in the rectal mucous membrane. Popow employed another procedure. While preserving the sphincter, he dissected free the lower portion of the rectum to form the new vagina and then sutured the upper portion to the anal sphincter. In 1911, independently of Popow, Schubert described a method which was free from the defects of Popow's procedure. Strassmann, Trapel, and Amreich perfected important details in the procedure. Today the method has been completely worked out and gives good results.

The literature records 110 cases operated upon by Schubert's method with 4 deaths, a mortality of 3.50 per cent. To these must be added 5 cases which were operated upon by Durst at the Gynecological Clinic at the University of Zagreb. The author reports Durst's cases in detail. A temporary recto-sacral fistula resulted in 2, but the end results in all 5 cases were excellent. A patient operated upon seven years ago has an elastic stricture several centimeters above the anus but this causes no difficulty or pain. The secretion from the new vagina is moderate. In none of the cases was there a normal uterus. There were no deaths.

The formation of a new vagina from the small intestine by the Baldwin Haeberlin-Mon method in 140 cases was associated with a mortality of 15.8 per cent. Of 3 cases in which this method was employed at the Zagreb clinic, only 1 showed a primary and permanent successful result. In 1 case the shortness of the mesentery rendered it impossible to bring down the small intestine and in another death resulted from peritonitis. The use of the small intestine is much more dangerous than that of the large intestine. There is danger of ileus, the secretion from the vagina is greater, coitus is often painful and the mortality is very high. In contrast, Schubert's method has a very low mortality and gives very good end results. As shown by Wagner's case, a normal labor may occur after the operation. Complications which may follow the Schubert operation are comparatively mild and readily controlled, whereas those associated with the use of the small intestine are always dangerous to life. Whether the flexure method of Ruge will give better results than the Schubert method remains to be seen. Of the earlier procedures that of Pfannenstiel is to be preferred when a uterus and rudimentary vagina are present.

VIDAKOVIC (G)

Björkenheim E A. The Treatment of Rectovaginal Fistulae (Zur Frage der Behandlung von Rectumscheidenfisteln). *Acta obst et gynec Scand* 1930, ix, 58.

The author reviews six cases of rectovaginal fistula treated during the period from January 1, 1912 to December 31, 1929, in the gynecological department of the Deaconess Hospital at Helsingfors. In three cases the fistula was situated in the lower portion and in three in the upper portion of the rectum. In four cases it developed after an operation performed at the hospital—a perineal operation in two and a laparotomy in two. Of the two patients who had a fistula at the time they were admitted to the hospital, one had a vulvo-anal fistula and the other a larger fistula situated high up in the left vaginal fornix. In the latter, a tampon had been left in the pouch of Douglas after a major operation. In two cases in which the fistula was small and situated high it healed spontaneously within three and five weeks respectively. In two cases in which it was low it was closed by an operation performed according to the Guerin-Sänger, or Crossen method by the perineal route. In one case a smaller rectovaginal fistula developed after the perineal operation, but no secondary operation was performed to close it as the patient did not return. In the case in which the fistula was situated high up in the left vaginal fornix the operation was performed according to the Legueu technique—a combination of the vaginal and perineal methods. This procedure has great advantages in many respects and is performed more easily than many others. On the fifth day after the operation flatus and feculent matter escaped through the vagina. By the fourteenth day flatus still escaped through the vagina but no feces. An opening the size of a pinhead was found in the left fornix. This was cauterized. The fistula healed completely in four days. The author recommends the method for cases in which a rectovaginal fistula situated high does not heal spontaneously and the perineal method or the vaginal method alone might be difficult and perhaps even impossible without a more or less mutilating operation.

## MISCELLANEOUS

Anspach B M. Observations on the Results Obtained in the Treatment of Sterility. *Am J Obst & Gynec* 1930, xix, 1.

This report is based on 132 private patients seen in the period from January, 1923 to January, 1928. The cases are divided into 2 groups—those of absolute sterility in which conception had never occurred and those of relative sterility in which conception had occurred at least once, but for a considerable time, notwithstanding opportunity and effort had not occurred again.

When in the Hübner test, no living sperms were found, the husband was sent to a urologist. The sperms in the cervical mucus exhibited much greater motility than those lying in the vaginal vault even

though they were close to the external os. Unquestionably a difference in the motility of spermatozoa in the vaginal vault and in the cervix is an index of the influence of the vaginal secretion.

The Rubin test is also of importance in the study of sterility in women, for if the tubes are closed, conception is impossible. However, the findings of one examination cannot be taken as absolute. It is necessary to repeat the test and to precede the second one with the use of an antispasmodic and replacement of the uterus if the position is abnormal.

Lipiodol injection of the tubes and X ray study was done by the author when the tubes were closed and the patient was willing to submit to whatever operative procedure was necessary to overcome the obstruction.

A diet rich in Vitamin A and the administration of calcium lactate are indicated in the treatment of both the husband and the wife.

While obesity may not be the cause of sterility, it is very frequently associated with evidences of diminished ovarian function and ovulation, and a

reduction in weight is often followed by improvement in the manifestations of the menstrual and reproductive functions.

A douche of a 1:500 solution of sodium bicarbonate or sodium chloride before coitus and maintenance of the recumbent posture with elevation of the hips for from six to eight hours after coitus are helpful.

In addition to these general measures, other therapeutic measures, including local treatment and operations, have been employed.

In the cases reviewed there were no pregnancies after salpingostomy, even under the most favorable circumstances.

Of 55 cases in which the patient agreed to complete study and treatment, conception occurred in 57 per cent. Of 42 cases in which the tubes were patent a full term child was born in 38 per cent.

The results of treatment in 69 cases in which the patient was not studied, most of which were consultation cases, were 19 conceptions, 16 full term pregnancies, 2 abortions, and 1 pregnancy now in progress.

E. L. CORNELL, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Sodemann T. Pathological Elevation of the Diaphragm in the Course of Pregnancy (*L'élévation pathologique du diaphragme au cours de la grossesse*) *Acta obst et gynec Scand* 1930 17 471

Sodemann reports a case of diaphragmatic relaxation during pregnancy which caused cardiac disturbances and collapse. After spontaneous delivery the symptoms disappeared completely.

Carreras, F. and Cortes C. Cardiopathies and Pregnancy (*Cardiopathies et grossesse*) *Bull Soc d obst et de gynec de Par* 1930 21, 35

This report is based on 104 cases of pregnancy in which numerous clinical and roentgen studies were made. In 60 cases the heart was normal. Mitral stenosis was present in 16, cardio aortic syphilis in 19, mitral insufficiency in 7, and coronary aortitis in 1. Among the 60 cases in which the heart was normal there were 10 in which heart lesions were suggested by subjective symptoms or by examination.

In mitral stenosis a dilatation of the cardiac cavities *en bloc* generally occurs in pregnancy. This does not occur as in the normal heart. As gestation advances the heart enlarges in all its diameters but it appears that the ascension of the vascular pedicle is not so marked as in normal cases. This enlargement is produced early, possibly in the second or third month while in normal cases it does not take place until the sixth or seventh month. All stenoses are unfavorably influenced by pregnancy, and especially by successive pregnancies. In a considerable number of cases of mitral stenosis a certain portion of the dilatation acquired during pregnancy persists. An exaggerated dilatation may be found during the puerperium together with signs of cardiac insufficiency that were not present before. These are doubtless due to the effort of labor.

It is impossible to predict the manner in which the heart will react to pregnancy. Stabilized stenoses are more tolerant of pregnancy than developing lesions. The authors 3 patients with pulmonary aortitis were brought through labor normally with the usual management. Therefore the authors cannot agree that this condition is a sufficient reason for the interruption of pregnancy. They believe that mitral stenosis is better tolerated by the pregnant woman than has been thought but is nevertheless the most dangerous of valvular lesions with the exception of congenital lesions of the right heart. They call attention to the fact that the interdiction of marriage on account of a heart lesion may result in a psychic depression as harmful to the heart as pregnancy.

In general hearts with compensated mitral insufficiency behave like normal hearts in pregnancy,

but if there is also some myocardial insufficiency, their behavior is pathological, with constant augmentation of volume involving all diameters. The dilatation is precocious, and the return to normal is slow. Only marked insufficiency is associated with danger and it is the ventricular, rather than the valvular insufficiency that is important.

True cardiac lesions of syphilitic origin present conditions similar to those produced by analogous valvular lesions from other causes such as rheumatism. In syphilitic aortitis in pregnancy, the heart undergoes true dilatation. The greatest increase is seen in the transverse diameters. The vascular pedicle does not make so evident an ascent as in normal cases. This observation is particularly striking in cases with periaortitis. The dilatation is decidedly precocious, and the return to normal may take several months. Pregnant women tolerate syphilitic aortitis well as a rule but dyspnea on effort and pain at the level of the manubrium, radiating to the clavicle are frequent symptoms. In the case of coronary aortitis observed by the authors, the pregnancy was continued to term and delivery was normal. The first sign of the lesion had been infarction of the myocardium in the fourth month of pregnancy.

Attention is called to the fact that pregnancy is frequently associated with a change of the normal valvular sounds which may mislead the physician. Even additional sounds may be present. The sounds at the base are particularly liable to modification, with reinforcement of the second aortic sound, lasting throughout pregnancy in the absence of hypertension and aortic dilatation. Not infrequently, a mitral pseudorhythm is noted. These sounds may be transient or intermittent, but more often persist up to the moment of delivery. The only modifications of rhythm observed in the normal cases reviewed were respiratory arrhythmias, isolated extrasystoles and true attacks of paroxysmal tachycardia.

The authors have come to the conclusion that the gravity of cardiopathies during pregnancy has been exaggerated. They believe that there is a tendency to lose sight of the medical aspect of the case in the obstetrical aspect. They state that the cardiologist's opinion must form the basis of the prognosis, and that medical and dietetic treatment must form the basis of the management.

The various types of dilatation are shown in diagrams.  
FLORENCE A. CARPENTER

Klemperer F. Tuberculosis and Pregnancy (*Tuberkulose und Schwangerschaft*) *Ztschr f Geburtsh u Gynaek* 1929 xcvi, 5

At the beginning of this century it was generally believed that pregnancy often causes the lighting up of a latent pulmonary tuberculosis and aggra

vates an active infection, and that therefore when it occurred in the presence of tuberculosis it should always be interrupted. With refinement in the diagnosis of tuberculosis this theory became untenable as, with modern methods, tuberculosis was demonstrable in 45 per cent of pregnant women. Hence it is now believed that while the manifest active lesion may justify interruption of the pregnancy and in prognostically unfavorable cases renders the procedure necessary, latent inactive tuberculosis is not an indication. The necessity for individualization of cases in the choice of treatment is therefore apparent. While Pankow repudiates individualization, demanding interruption of pregnancy in manifest tuberculosis but rejecting it in latent tuberculosis, latent inactive tuberculosis can be distinguished from manifest tuberculosis only by individualization.

The author is decidedly opposed to the Heidelberg tenets (*Menge supported by Schultze Rhonof*). He states that the theories regarding lipolytic ferments in the blood of pregnant women and demineralization and hyperfunction of the thyroid are entirely unproved and hypothetical. Schultze Rhonof denies the right and duty to interrupt pregnancy because up to the present time there is no satisfactory explanation for the claimed unfavorable influence of pregnancy on tuberculosis of the lungs. However, when there is danger it makes no difference whether we have an explanation for it or not. Schlumpert regards pregnancy as a special tax on the tuberculous woman. According to Granzow of the Breslau Gynecological Clinic, pregnancy, and especially the puerperium, increases the general susceptibility of the organs to tuberculous disease.

The statistics on population cannot be maternally influenced by the problem as pregnant women with manifest tuberculosis constitute only about 15 per cent of the population (Pankow, 14 per cent, Rosthorn, 106 per cent, and A. Mayer, 15 per cent, before the World War). The statistics of clinics on aggravation of tuberculosis by pregnancy are so divergent that they are of little assistance. They vary between 7 and 100 per cent because the material is very different and the classification of Turhan is insufficient. The Charity Gynecological Clinic of Berlin had 101 cases in a period of eight years, but only 48 of the patients could be traced later. Pankow had only 5 cases in the second stage. Pankow and Franz Zondek had only 2 cases each in the third stage and both of these were fatal. The incidence of aggravation in their cases was therefore 100 per cent. On the other hand, Winter had 1 case in the third stage in which the condition improved, the incidence of improvement being therefore 100 per cent. With such unsatisfactory statistical evidence, as Franz Zondek also has emphasized, there remain only the general impression and one's own experience as a basis for judgment.

The author states that his own rather rich experience in hospital and private practice has led him to the conviction that the danger of pregnancy to women with tuberculosis is not a slight one and that

the incidence of from 16 to 23 per cent reported for tuberculosis exerting an unfavorable effect on pregnancy is too low. He cites the cases of 2 daughters in 1 family who developed manifest tuberculosis during pregnancy, and states that in well observed cases of tuberculosis and pregnancy in the wives and daughters of physicians a relationship between pregnancy and the outbreak or aggravation of the tuberculosis has been acknowledged.

The tuberculous woman who becomes pregnant should go to the hospital at once, but the author asks how many women will find this possible. He asks also how many women are willing and able to stay away from home for a year, and how many marriages would be disrupted by such a prolonged absence. He emphasizes that even though we do not recognize a social indication for the interruption of pregnancy today, there is in addition to the medical indication a social accessory indication which under certain conditions may be decisive.

Klemperer emphasizes that pregnancy is a source of danger to the tuberculous woman and its earliest possible interruption affords more favorable conditions for treatment of the tuberculosis in a sanatorium. In some cases, however, sanatorium treatment begun immediately and continued up to the time of labor may render interruption of the pregnancy unnecessary. Whether in the individual case interruption of pregnancy is allowable or necessary, must be decided according to the medical and social conditions. Apical foci are no longer considered the essential beginning of the progressive disease. Today, the early infiltration represents practically the beginning of phthisis. Open tuberculosis can be differentiated from the closed form, but there are potentially open cases which only occasionally eliminate bacilli as well as progressive closed but internally open cases. There are also cases with cavitation in which for a long time there is no expectoration or only a scanty amount of sputum free from bacilli. In all open cases interruption of pregnancy is allowable, but in cases with slight apical dullness, indefinite respiratory changes, circumscribed roentgen shadows at the apex, or only slight apical veiling without shadows below the clavicle and without distinct rales, interruption of the pregnancy is not allowable. In doubtful cases one may wait until the course becomes established. To the group of doubtful cases belong those of apical tuberculosis with dense shadows at the apex, bands passing from the apex to the hilus, and more definite physical signs. If in these cases the condition does not progress and if the patient's social conditions are not unfavorable the pregnancy may be allowed to continue. An early infiltration is always an indication for the interruption of pregnancy, as is also cavity formation. In the presence of disseminated foci one may wait, but with aggravation of the condition interruption of the pregnancy is indicated. The blood sedimentation test is of no aid in pregnancy. Hemoptysis is a sign of progressive disease and justifies interruption of the pregnancy.

R. KURY (G)



Gammeltoft S A A Case of Hemorrhagic Encephalitis Following Salvarsan Treatment During Pregnancy (Ueber einen Fall von Encephalitis haemorrhagica nach Salvarsanbehandlung waehrend der Schwangerschaft) *Acta obst et gynec Scand*, 1930 ix 167

Following the report of a case of hemorrhagic encephalitis after salvarsan treatment during pregnancy, the author emphasizes that salvarsan should always be given by a specialist who is able to detect the very first signs of complications

Newell F S Obstetrical Management of Cases of Urinary Infections in Pregnancy *New England J Med*, 1930, ccc 371

Newell states that there are several groups of cases in which termination of pregnancy may be necessary on account of severe pyelitis. The first group are those in which the process is of long standing and the patient is so toxic when she is first seen by the consultant that he cannot fail to recognize the seriousness of her condition and the inadvisability of further delay in the hope that continued treatment may prove successful

The second group are those in which the process is not of long standing but thorough treatment has proved unsuccessful in relieving the symptoms. In a large number of these cases, cystoscopy and renal lavage are necessary after medical measures have failed. After this treatment the majority of the women are able to carry the pregnancy to term with perhaps only a slight recurrence of the symptoms in the later months. However after delivery, a cure can be effected only by prolonged treatment and sometimes not at all

The third group of cases under discussion are those in which a definite pyelonephrosis has developed either because of a lack of treatment or in spite of treatment

In the fourth group are the cases in which the infection is due to a virulent streptococcus instead of the colon bacillus. If the infection does not respond promptly to treatment the pregnancy should be terminated as there is great danger of a general infection which may prove fatal

The method employed in the termination of the pregnancy depends on the stage of the pregnancy, the condition of the patient and the condition of the soft parts. Newell believes that before the sixth month vaginal hysterotomy with immediate emptying of the uterus is the method of choice. After the sixth month medical induction of labor by means of castor oil, quinine and the repeated use of small doses of pituitrin combined with rupture of the membranes will usually be successful. In case of failure the dilating bag may be employed to secure cervical dilatation. The nearer the patient is to term the more probable it is that medical induction of labor combined with rupture of the membranes will be successful. In the author's opinion, abdominal cesarean section should be abandoned

ROLAND S CHON M D

Titus P, Willets E W, and Lightbody, H D. Fluctuations in the Blood Sugar During Eclampsia. A Report of Additional Cases. *Am J Obst & Gynec* 1930, xix 16

To twelve cases which they reported previously, the authors add seven others which confirm their contention that there is a wide fluctuation in the blood sugar in exceedingly short periods of time during an eclamptic seizure. Like the first group of cases, the second group showed that it is characteristic for the convulsions to be preceded by sharp falls in the blood sugar periods of relative hypoglycemia. It has been found also that a sudden cytologic poëmia or glucose impoverishment within the erythrocytes is the outstanding feature of these periods

In a series of forty two cases of eclampsia which are presented an analysis of single blood sugar values taken from each case shortly after the patient's admission to the hospital and before treatment showed that the cases with normal or lower than normal values outnumbered those with hyper levels in the ratio of 15 to 1

Work now under way indicates that hypoglycemic levels are a predominant and fairly constant feature of true pre eclampsia

The authors therefore conclude that the intravenous administration of dextrose is specific treatment for eclampsia and pre eclampsia while the addition of insulin or the use of insulin alone is not indicated

E L CORWELL M D

Gyllensvärd N The Results of Treatment of Eclampsia in the Stockholm Sued Obstetrical Institute in the Period from October 1 1911 to December 31 1928 and of Eclampsism and Nephropathy in the Period from 1918 to 1928 (Die Behandlungsergebnisse an der Gebaersanstalt Stockholm Sued bei Eklampsie vom 1 Oktober 1911 zu Dezember 31 1928 sowie bei Eklampsism und Nephropathie 1918 1928) *Acta obst et gynec Scand*, 1930, ix, 221

In this report the cases classified as cases of eclampsia were those associated with convulsions, and the cases classified as cases of eclampsism were those in which, on account of a combination of symptoms such as oliguria, edema, high blood pressure, dimness of vision, changes in the fundi, vomiting, headache, pain in the epigastrium, and general restlessness, the onset of eclampsia was feared. Cases classified as cases of nephropathia were those of the milder forms of pregnancy toxicosis in which on one occasion the urine had contained more than 1 per cent of albumin

Eclampsia. In 48 053 deliveries (excluding abortions) there were 282 cases of eclampsia. The incidence of the condition was therefore 0.6 per cent. The total maternal mortality was 7.8 per cent, and the corrected maternal mortality 6.7 per cent. The latter figure was obtained by deducting 2 cases in which following spontaneous delivery, death occurred from sepsis after the eclamptic symptoms had disappeared and 1 case of placenta previa centralis in which death was due to hemorrhage. The

total fetal mortality was 31 per cent and the corrected fetal mortality after the deduction of the deaths of fetuses weighing less than 2,00 gm, 20 per cent

There were 67 cases of eclampsia during pregnancy with 6 deaths, a mortality of 9 per cent, 155 cases of eclampsia during labor with 11 deaths, a mortality of 7.1 per cent, and 60 cases of puerperal eclampsia with 5 deaths, a mortality of 8.3 per cent

Spontaneous delivery occurred in 40 per cent of the cases. Forceps were used in 119 cases, and other ordinary obstetrical interventions were done in 36 cases. Labor was induced in 7 cases. Abdominal cesarean section was performed in 2 cases, and vaginal cesarean section in 6

Venesection was used more and more frequently. During the period from 1924 to 1928 it was employed in 71.4 per cent of the cases

In agreement with the findings of Finnish and Norwegian investigations, the frequency of eclampsia was found to increase in the spring

**Eclampsia.** In 28,674 deliveries there were 149 cases of eclampsia. Thirteen (8.7 per cent) mothers developed eclampsia, but none of them died

In 90 cases which were treated for more than twenty-four hours before delivery, the total maternal mortality was 4.4 per cent, the total fetal mortality, 30.2 per cent, and the corrected fetal mortality, 16.7 per cent. Spontaneous delivery occurred in 60 per cent of the cases. Forceps were applied in 27, and other ordinary obstetrical interventions were done in 6. Labor was induced in 2 cases on account of retinitis albuminurica. Abdominal cesarean section was done in 1 case

In 59 cases treated for twenty-four hours or less before delivery the total maternal mortality was 6.7 per cent, the total fetal mortality, 14.5 per cent, and the corrected fetal mortality, 6.5 per cent. Spontaneous delivery occurred in 79.7 per cent. Forceps were applied in 9 cases, and other ordinary obstetrical interventions were done in 2

**Nephropathy.** In the 28,674 deliveries there were 670 cases of nephropathy. Seventeen (2.5 per cent) mothers developed eclampsia, but none died

In 188 cases which were treated for more than twenty-four hours before delivery the total maternal mortality was 1.06 per cent, the total fetal mortality, 12 per cent, and the corrected fetal mortality, 6.5 per cent. Spontaneous delivery occurred in 78.2 per cent of the cases

In 482 cases which were treated for twenty-four hours or less before delivery there was no maternal mortality, the total fetal mortality was 9.3 per cent, and the corrected fetal mortality was 5.6 per cent. Spontaneous delivery occurred in 96.1 per cent of the cases

Wiesner, B. P. On the Separation of the Kyogenic Hormone from Human Placenta. *Edinburgh M J*, 1930, xxviii, 73

In experiments on mice and rats the author found that the oestrus and reproductive cycles could be

readily determined from the microscopic changes occurring in the vagina, the vaginal epithelium being cornified during the oestrus cycle and mucinous during the reproductive cycle

The ovary is believed to produce in succession at least two different hormones and that it functions in two endocrine phases. It is known that after hypophysectomy no genital development occurs in animals of either sex. Tissue grafts and acid extracts of the anterior lobe of the hypophysis remedy the deficiency and may even induce early oestrus. Therefore the anterior lobe of the hypophysis probably contains a sex hormone which directs the endocrine function of the ovary

Two gonadotrope actions of extract of the anterior lobe of the hypophysis have been established (1) the oestrogenic (grafts and acid extracts), and (2) the kyogenic (alkaline extracts). The latter favors the occurrence of, and maintains, pregnancy

Zondek and Aschheim have shown that the urine of pregnant women and the human placenta contain substances similar in effect to grafts of the anterior lobe of the hypophysis, and in experimental investigations on animals they observed that oestrus and the mucified vaginal epithelium typical of pregnancy occurred after the injection of the urine of pregnancy. The latter development was probably due to activated kyogenic hormone. The author produced the same result in mice, using extract of human placenta

CHARLES F. DUBORS, M.D.

Superhi, C. Late Results of Simple Abortion and Abortion with Tubal Sterilization in Women with Pulmonary Tuberculosis (*Esiti remoti dell'interruzione di gravidanza semplice e associata a sterilizzazione tubarica in donne affette da tubercolosi polmonare*). *Riv. ital. di ginec.*, 1929, x, 493

The author reports twelve cases in which simple abortion was done and ten in which abortion with tubal sterilization was done on account of pulmonary tuberculosis. In fifteen of the twenty-two cases the tuberculosis had been present for some time before the beginning of the pregnancy. In all except one case the abortion was induced in the first three months of the pregnancy. In the one exception it was induced in the fourth month

Of the twelve women subjected to simple abortion, two (16.6 per cent) died within about a year. In two, the condition remained stationary and in four it progressed. Four showed a certain amount of improvement. The condition improved or remained stationary in those who did not become pregnant again

Of the women subjected to abortion with tubal sterilization, one (10 per cent) died within about a year and the others showed rather marked improvement in the pulmonary condition

The author comes to the conclusion that pulmonary tuberculosis is aggravated by pregnancy, and that abortion, preferably with sterilization, should be done in progressive cases

AUDREY G. MORGAN, M.D.

## LABOR AND ITS COMPLICATIONS

Fontes J Contribution to the Study of the Causes That Initiate the Contractions of Labor (Contribution à l'étude des causes du déclanchement du travail de l'accouchement) *Gynécologie* 1929 LXIII, 577

Immediately after the death of a virgin guinea pig by bleeding the two horns of the uterus were excised and portions of equal size from each were placed in oxygenated Ringer's solution in a thermostat. A piece of ebonite large enough to cause distention was then introduced into one of the horns and tracings were made of the movements of the two horns.

The horn into which the piece of ebonite had been introduced showed energetic rhythmic movements comparable to those of the gravid uterus at the time of delivery and continuing for hours. The other horn showed very slight movements or none at all.

These findings indicate an action of the fetus on the uterus but they do not explain why labor contractions begin on one day rather than another when the distention of the uterus by the fetus remains the same. An additional factor was therefore sought in the blood of the mother.

In experiments to demonstrate such an additional factor the two horns of a guinea pig uterus were placed in separate receptacles in oxygenated Ringer's solution at a temperature between 38 and 39 degrees C and after relaxation of the contraction caused by the excision of the organ 2 or 3 cm of the defibrinated venous blood of a woman in labor (uterine dilatation one to three fingers) were introduced into one of the receptacles and the same quantity of the defibrinated blood of a man was introduced into the other receptacle. The uterine horn contained in the first receptacle contracted immediately or after a brief delay. The contractions were rhythmic and of great amplitude resembling those of parturition and continued for hours. The uterine horn in the other receptacle showed insignificant contractions or none at all. When these experiments were repeated with the horn of the uterus of a gravid guinea pig the results were similar.

In another experiment use was made of the blood of a woman in whom the membranes had ruptured before the beginning of labor and the contractions were very weak, necessitating forceps delivery. The blood was withdrawn before the intervention. This blood had no effect at all on the contractions of the horn of the guinea pig uterus.

Blood withdrawn from a woman eight days before delivery induced only a short series of very weak contractions separated by long periods of immobility.

Blood taken from a woman during labor produced the described contractions quite clearly but the blood of the same woman taken six hours after delivery was ineffective.

Blood obtained during the period of expulsion in a short labor with vigorous pains acted very energetically the contractions induced being so close

together that they were superimposed in the tracing whereas blood obtained from a woman delivered eight days before its withdrawal caused practically no contractions of the other horn of the same animal.

FLORENCE A. CARPENTER.

Lindén, O Paralysis in the Distribution of the Nervus Ischiadicus in Connection with Child birth *Acta obst et gynec Scand* 1930, 17, 300

After reviewing different types of paralysis associated with pregnancy and labor the author describes the traumatic peroneal paralysis the development of which Lefebvre and Hunermann have explained satisfactorily. The lumbosacral nerve trunk arising from the fourth and fifth lumbar nerves and forming the main part of the peroneal nerve takes its course directly over the sharp innominate bone where it can be easily injured by the fetal head, particularly in cases of disproportion between the fetal head and the size of the pelvis. On account of rotation of the fetal head in its passage through the pelvis the resulting paralysis is nearly always unilateral. In mild cases it disappears completely after a few months.

The author reports four cases of traumatic peroneal paralysis in which recovery resulted. In two cases it developed in a multipara following spontaneous delivery, and in two it developed in a primipara following forceps delivery. One of the multiparae had had encephalitis lethargica prior to her last confinement but the others had never suffered from any nervous disease.

In conclusion the author reports a case of peroneal paralysis following septic criminal abortion in which the paralysis was associated with the formation of a circumscribed abscess in the pelvis on the same side. The paralysis disappeared spontaneously when the swelling diminished in size.

Rojas D A A New Manipulation for Direct Delivery of the Shoulders When the Arms Are Extended (Una nueva maniobra para el desprendimiento directo de los hombros cuando los brazos están flexionados) *Semana med*, 1930, LXVIII, 65

The arms are rarely extended beside the head when the shoulders are delivered spontaneously as the contractions of the uterus which deliver the trunk keep them down beside the chest. However their extension may occur in spontaneous breech delivery when the contractions of the uterus are not strong enough and in labors in which traction is necessary to prevent death of the fetus.

In the manipulation used by the author when the arms are extended the posterior arm is brought around until it is anterior. This rotation brings the corresponding shoulder down so that in the majority of cases it is delivered spontaneously or only slight pressure with the finger on the bend of the elbow is necessary to complete the delivery. The different steps of the rotation and delivery are illustrated.

Twenty five cases in which the method was used are reported and the results are compared with those

of the classical methods and Mueller's manipulation. There was no maternal mortality. Nineteen of the children were delivered alive. Five of the six infants which were born dead had been seriously injured by delayed labor and some of them were unusually large. In sixteen cases the manipulation was not tried until Mueller's manipulation had failed. The puerperium was febrile in only one case. The only injury to a fetus was a bilateral fracture of the humerus in a case in which both the Mueller manipulation and the author's manipulation failed on account of impaction. In the author's manipulation there is no danger of infection and the life of the child is less endangered than in other methods because the manipulation can be performed very quickly. The procedure does not cause fracture or injure the brachial plexus or the roots by traction, and its results are better than those of other manipulations even when the child is very large.

AUDREY G. MORGAN, M.D.

Chapple, H. The Use of Forceps and Caesarean Section in Labor. *Brit M J*, 1930, 1, 104.

All women should be examined at the thirty-sixth week of pregnancy. In the majority of cases it will be found that the head passes the brim and labor should be allowed to continue. If delay occurs at the midpelvis, a possible occiput posterior position should be corrected and forceps applied. If delay occurs at the outlet, the timely application of forceps will usually be sufficient. When there is overlapping of the head at the brim, no interference is necessary if moulding and strong uterine contractions will allow the head to pass. In such cases a study of the psychic side of the patient will be helpful and the use of scopolamine and morphine of great value. If, after a reasonable time, it is found that the head is not coming down in the pelvis, caesarean section may be performed safely. If the head passes through the pelvis and becomes at all engaged, forceps should be used. When the head appears to be too large, the patient should be given the test of labor, and if no advance is made, a caesarean section should be performed.

ABRAHAM A. BRAUER, M.D.

Hornung, R. The Status of Caesarean Section in Modern Obstetrics (Die Stellung des Kaiserschnittes in der modernen Geburtshilfe). *Muenchen med Wchschr*, 1929, 11, 1586.

The statistics of the University Gynecological Clinic in Berlin for the period from 1923 to 1925 when the clinic was under the direction of Bumm and for the period from 1926 to 1928 when it was under the direction of Stoeckel show that with the limitation of the indications for caesarean section in cases of narrow pelvis in the second period there was a decrease in the mortality from 5.3 to 1.56 per cent in cases of narrow pelvis, whereas with the increasingly active treatment of placenta previa there was an increase in the mortality in cases of the latter condition.

The statistics cover 13,253 deliveries, 450 (4.2 per cent) of which were accomplished by caesarean section. In 7,325 deliveries the total mortality from infection was 0.31 per cent, whereas that of caesarean section was 3.37 per cent. In the cases of women admitted without fever and delivered spontaneously or by operation the mortality was only 0.057 per cent. The mortality of vaginal operative delivery in 695 cases was 1.7 per cent in the cases with infection and 0.43 per cent in those without infection. A comparison of vaginal and abdominal operative methods therefore shows that abdominal caesarean section had a mortality from eight to ten times greater than the mortality of vaginal procedures and that even when it was carried out only on the strictest indications its mortality was always from 3 to 4 per cent higher than that of major vaginal interventions.

Of 25 cases in which repeated caesarean sections were done very extensive adhesions between the uterus, abdominal wall, omentum, and intestines were found in 12 and rupture of the uterus occurred in 7. It was surprising that only 2 of the ruptures occurred after rupture of the membranes. The rupture of the scar at the end of pregnancy or the beginning of labor is favored by mechanical factors or placental in the region of the scar. All of the women survived, but in the cases of 5 it was necessary to remove the uterus. Three of the 7 infants were dead.

From these findings the author concludes that we are not justified in assuming that caesarean section is without danger. Its indications must be determined from both the obstetrical and the surgical viewpoints, and besides the primary mortality, the possible dangers associated with future pregnancies and labors must be taken into consideration.

K. HEIM (G)

## PUERPERIUM AND ITS COMPLICATIONS

Petersen, L. S. Causes of Death in the Puerperium. *Acta obst et gynec Scand*, 1930, 19, 432.

Of 24,155 women delivered in the Public Maternity Hospitals of Norway during the years from 1918 to 1928 165 died, a mortality of 0.7 per cent. Of those who were delivered in the clinics, from 0.5 to 0.6 per cent died.

About 50 per cent of the deaths were caused by infection and toxæmia. Toxæmia was responsible for slightly more deaths than infection. Ten per cent of the deaths were due to placenta prævia. As many deaths in cases of toxæmia and placenta prævia were caused by infection, infection was probably the cause of about two thirds of all deaths. It must be borne in mind, however, that in the absence of the primary disease, infection would not have occurred. Five deaths were due to rupture of the uterus and 4 to postpartum hæmorrhage.

Causes of death not directly connected with pregnancy or labor included pneumonia (especially frequent in the years from 1918 to 1920), influenza, renal diseases not due to pregnancy, and heart dis-

eases Women with tuberculosis do not often die in obstetrical clinics Six per cent of the total number of deaths were due to other conditions which occurred in only 1 or 2 cases each

**Skujau K Cessation of the Coagulation of the Blood in Postpartum Hemorrhage Shock Bleeding** *Acta obst et gynec Scand*, 1930, 11 453

In about 13,000 confinements the author found 11 cases of postpartum hemorrhage in which the blood coagulated normally at first and the bleeding ceased, but after from fifteen to twenty minutes (in a few cases after from one to four hours) the bleeding began again and blood did not coagulate In 7 cases the uterus was firm and permanently contracted and in 2 cases it was completely atonic

In all of the cases there had been a preliminary severe hemorrhage and in all but 1 case 1 or more intra uterine manipulations had been made There were 4 cases of placenta previa with prolonged copious bleeding and in 3 cases there was premature detachment of a normally implanted placenta In most of the cases the hemorrhage of non coagulating blood began with a sudden change in the patient's general condition suggesting obstetrical shock

The non coagulating blood lacked fibrinogen Blood simultaneously collected by venous puncture coagulated in a normal manner The uterus was the site of a purely local and temporary hemophilia manifested by a diffuse capillary hemorrhage In 7 cases the blood was found thickened at the beginning of the hemorrhage The author believes that this type of bleeding is due to a condition of shock and suggests for it the name shock bleeding

All usual ways of arresting hemorrhage, including compression of the aorta are of no avail, they waste time and aggravate the condition of shock The only operation to be considered is vaginal hysterectomy In 4 of the cases reviewed the bleeding stopped after transfusions of 1,000 1,200 1,200, and 2,000 c cm of blood respectively but in 3 cases it was fatal In several of the fatal cases large quantities of saline solution were given in addition to the same quantities of blood as were transfused in the cases with recovery The saline solution seemed to have an unfavorable effect

**Piñero Garcia P P Simple Acute Endocarditis in Puerperal Infection (Endocarditis aguda simple en la infección puerperal)** *Semana med*, 1930, xxxvii 236

Acute simple endocarditis is rare in puerperal infection It occurs in only 0.68 per cent of the cases, its incidence being therefore one third that of malignant endocarditis It is more frequent in infection following delivery at term than after abortion It appears early and its course is rapid It generally begins in the second half of the first week of the puerperium, but occasionally does not develop until the third week Serious infection and previous changes in the endocardium are predisposing causes The importance of the first factor is shown by the

fact that the condition occurred in 4.47 per cent of the cases of serious infection and in none of the cases of mild or moderately severe infection reviewed by the author In 18.18 per cent of the autopsies, chronic valve lesions were found The condition involves the mitral orifice most frequently even when there are similar anatomical changes in the other orifices from previous infections It is not preceded, accompanied, or followed by signs of pseudo-rheumatism

As its beginning is latent, the heart must be examined daily Its functional and subjective symptoms are vague It is sometimes manifested by an aggravation of the general condition with recrudescence or exacerbation of fever, increased and persistent tachycardia, weakness, irregularity of the pulse, and a fall in the blood pressure The findings on palpation and percussion are inconstant There may be displacement of the apex an increased cardiac impulse and an increased area of precordial dullness but these signs are not very frequent The only signs of real value are the auscultation signs Auscultation shows changes in the intensity of the sounds in the first few days of the disease and finally a murmur which is the true symptom of simple acute endocarditis The murmur has all the characteristics of an organic murmur, it is holosystolic, localized at the apex, and propagated to the axilla and back, it is not affected by changes of position or respiration, it disappears with cure of the disease or passes into chronicity This murmur of mitral insufficiency appears early and develops rapidly and may or may not be accompanied by accentuation of the second pulmonary sound The course of the disease is five or six weeks in the cases that become chronic, approximately three weeks in those with recovery, and one or two weeks in those that are fatal

The author reports seven cases with three deaths a mortality of 42.85 per cent He states that acute simple endocarditis in the puerperium is dependent directly on the puerperal infection, it may be solitary or accompanied by disease of other viscera It has a tendency to become chronic The treatment is hygienic and dietetic with the use of heart tonics according to the conditions of the puerperal infection

AUDREY G MORGAN, M D

**Albeck V Sixty Nine Cases of Pyuria Gravidarum Febrilis** *Acta obst et gynec Scand*, 1930, 11, 30

In about 10,000 deliveries there were 226 cases of pyuria gravidarum Sixty nine of the patients had pyuria and fever during pregnancy or delivery while 157 were afebrile during delivery and probably also during pregnancy Only 15 had a premature delivery In 6 cases the premature delivery was probably due to intoxication of pregnancy

In 17 of the 69 cases of pyuria gravidarum abortion occurred In 2 cases it occurred in the fifth and sixth month respectively, in 2, during the tenth and twelfth week before term with death of the infants soon after birth, in 3, from six to eight weeks before

term, in 7, from four to six weeks before term, and in 1, three weeks before term. Thirteen of the prematurely born infants survived.

In 6 cases, artificial interruption of pregnancy was done. In 1 it was done in the sixth month, and in 6, in the eighth or the ninth month. Three of the infants died.

Interruption of the pregnancy, spontaneous or artificially induced, therefore occurred in a third of the cases. The infant mortality was 11.6 per cent. Only 1 of the mothers died. One of the mothers was subjected to nephrectomy for pyonephrosis of the right kidney. All of the women suffered from a persisting bacteriuria even after prolonged medical treatment in bed.

### NEWBORN

Sunde, A. The Prognosis of Premature Infants and the Prevention of Birth Trauma (Die Prognose der Frühgeborenen und die Prophylaxe des Geburts-traumas). *Acta obst et gynec Scand*, 1930, 19, 477.

The author discusses the physiological and mental development of prematurely born children on the basis of 1,423 such children who weighed less than 2,500 gm at birth. The fact that the mortality of 35.8 per cent in the first year increased only to 38.2 per cent in the seventh year indicates that birth traumata were responsible for many of the deaths.

Of 559 prematurely born children and adolescents between the ages of six and twenty-one years, 7 per cent were defective, and of the latter, 5.7 per cent were defective mentally. It was found that apparently normal children born prematurely are considerably below normal children born at term both physically and mentally. Schütz found that they are below the normal child of school age in both weight and stature.

Of 200 infants subjected to autopsy after death from intracranial hemorrhage, 61 per cent were born prematurely and weighed less than 2,500 gm at birth and 42 per cent presented by the breech or foot. Thirty-five and five tenths per cent were born after short labors and 22 per cent after long labors. Both very short and very long labors are associated with danger to the infant.

In discussing the prophylaxis of birth injuries the author warns against exaggerated effort to support the perineum. He states that the effort of severe labor should be alleviated, by narcosis if necessary. The child born in asphyxia must be carefully treated. The Schultze swinging maneuver is to be avoided.

Of 200 infants dying from intracranial hemorrhage, 6 were delivered by abdominal cesarean section and 4 by vaginal cesarean section. In 5 of the 6 cases of abdominal cesarean section cervical section was done. Cervical section should not be done in clean cases. Thirty of the infants with fatal intracranial hemorrhage were delivered with forceps. Forceps should be used only when definitely indicated, and should always be applied biparietally.

Breech delivery is associated with great danger to the aftercoming head. When considerable resistance is encountered, the usual manual grip should be replaced by the application of forceps to the head.

The best prophylaxis against birth traumata is the prevention of premature birth. Brain injuries in premature infants are due chiefly to defective development of the vessels. Delivery before term is justified only when the life or health of the mother demand it. When it is necessitated by a narrow pelvis, cesarean section should be done.

Wachenfeldt, S. von. The Resuscitation of Apparently Dead Newly Born Infants (Von der Wiederbelebung neugeborener, scheinototer Kinder). *Acta obst et gynec Scand*, 1930, 19, 600.

A small barospirometer constructed on the principles of Thunberg's barospirometer was tried for the resuscitation of newborn infants with asphyxia, but proved unsatisfactory. The effect of Thunberg's harospirometer has been found quite different in newborn infants as compared with adults. This is due to the following facts:

1. The air in the barospirometer does not force its way into atelectatic lungs.

2. With the harospirometer as now constructed, the ventilation at each breath in air carrying lungs does not exceed more than one seventh of the air volume. This appears to be enough for adults, but is not sufficient for children, especially newborn infants.

3. In newborn infants and young children the chest is too soft to prevent its compression and thereby compression of the lung during the positive pressure phase. Ventilation is therefore prevented or entirely inhibited.

On the other hand it has been found that if the barospirometer is used for indirect insufflation, which may be accomplished by modifying it slightly, excellent results are obtained in the resuscitation of newborn children with asphyxia. Under such conditions it acts in the same way as the spiropore described by Willez in 1876.

The author is having made an apparatus which is a modernization of the Willez spiropore.

Lundquist, B. Intrathoracic and Intra-Abdominal Hemorrhages in the Newborn (Hémorragies intrathoraciques et intra abdominales chez le nouveau né). *Acta obst et gynec Scand*, 1930, 19, 331.

The author has collected three cases of intrathoracic hemorrhage and forty-nine cases of intra-abdominal hemorrhage in the newborn. In two of the cases of intrathoracic hemorrhage, the bleeding came from the thymus and in one from the mediastinum. In five of the cases of intra-abdominal hemorrhage, the bleeding was due to rupture of the liver parenchyma and in one to rupture of the spleen. In fourteen there was a subcapsular hemorrhage in the liver, in eighteen, a suprarenal hemorrhage, and in twelve, an intraperitoneal hemorrhage of unknown origin.

The chief etiological factors were probably the circulatory disturbance in the fetus caused by labor and the revolution of the circulation created by the child's first breath. The circulatory disturbance probably resulted in stasis in the vena cava inferior which in turn caused by peremia in the parenchymatous organs followed by hypertrophy of those organs and a decrease in their resistance to trauma.

A mechanical origin of the parenchymatous ruptures in the liver and spleen seemed to be confirmed by the fact that the fetuses with such ruptures—whether presenting by the head or breech—passed the pelvic canal in such a position that direct pressure was exerted against the respective organs by the symphysis. Splenic rupture was favored also by syphilitic changes and enlargement of the spleen.

In the cases of subcapsular hemorrhages of the liver and hemorrhages of the suprarenals and thymus no mechanical factors could be determined. Asphyxia appeared as a fairly constant phenomenon, but was not sufficient alone to explain the bleeding. The author is inclined to assume the co-existence of a biological factor such as a hemophilic tendency in the fetus—a theory which is in accordance with the findings of recent blood investigations. This hypothesis is supported by the fact that more than 70 per cent of the hemorrhages occurred in males and that in a case of thymic hemorrhage there was reason to assume the presence of inherited hemophilia.

The origin of the intraperitoneal hemorrhages the source of which could not be found, is not clear. Certain circumstances seemed to indicate that the bleeding came from small ruptures in the liver or suprarenals, but the possibility of capillary hemorrhages through the peritoneum analogous to those that occur through the intestinal mucous membrane cannot be disregarded.

Clinically, the different form of hemorrhage in the chest and abdomen presented a uniform picture. The majority of the infants surviving the first twelve hours appeared quite well for a greater or lesser number of days and then suddenly became ill and died within a few hours without presenting any local physical signs. In some cases however, premonitory signs were noted and a diagnosis of intra-abdominal hemorrhage was made. Hemostatic measures were unsuccessful as a treatment begun after the child has been taken ill has no chance of being effective. The only therapy possible consists of prophylactic measures based on examinations of the blood of infants born in asphyxia.

Genell, S. Rupture of the Liver in the Newborn After Spontaneous Delivery (Leberruptur bei Neugeborenen nach Spontangeburt). *Acta obs et gynec Scand*, 1930, 14, 180.

The author reviews three of the four cases of liver rupture in the newborn following spontaneous delivery which have been recorded in the literature and reports three of his own. Two of the infants were born of the same mother who had an obliquely contracted pelvis.

Genell believes that such ruptures are due to two factors, a mechanotraumatic factor and a constitutional factor. The mechanotraumatic factor is a combination of compression and a tangential force exerted on the abdomen of the fetus by a portion of bone protruding into the lumen of the maternal pelvis, and the constitutional factor an increased disposition to bleed. The rarity of the ruptures is explained by the rarity with which these two factors are associated.

## MISCELLANEOUS

Orley W H F. Antenatal, Natal and Postnatal Problems. *Brit M J*, 1930, 1, 275.

Orley shows the death rate in the East End Maternity Hospital, London, throughout its history in the following table:

IN PATIENTS			
Period	Confinements	Deaths	Deaths per 1,000 cases
1885-89	427	1	2.34
1890-97	1,620	12	7.37
1898-02	1,278	2	1.57
1903-07	1,066	6	3.05
1908-13	3,223	6	2.13
1914-20	4,070	10	2.07
1921-26	6,373	7	1.10
1927-28	2,517	3	1.19
Total	22,553	47	2.10

OUT PATIENTS			
Period	Confinements	Deaths	Deaths per 1,000 cases
1890-97	1,548	3	1.94
1898-02	1,530	5	3.27
1903-07	2,384	1	0.42
1908-13	5,597	1	0.18
1914-20	7,490	8	1.07
1921-26	7,027	2	0.29
1927-28	1,603		
Total	27,184	20	0.74

In the district and in the hospital together, the rate was 1.35 for the whole period.

The death rates in the periods from 1884 to 1913 and from 1921 to 1928 are compared in the following table:

Period	Confinements	Deaths	Deaths per 1,000 cases
1884-1913	19,594	37	1.9
1921-1928	17,523	12	0.68

The institution of full antenatal work with compulsory attendance was followed by a drop in the already low mortality to a third of its former level. In the last 10,000 consecutive confinements there was only 1 case of eclampsia and this was slight. The patient had escaped the antenatal supervision for three weeks. She had 1 convulsion after delivery and made an uneventful recovery. Especially among the working classes, home treatment is

extremely unsatisfactory. In the hospital, energetic eliminative treatment with hot baths, packs, castor oil, Epsom salts, enemata, and starvation is given.

Efficient treatment of toxemia reduces the incidence of concealed accidental hæmorrhage associated with albuminuria. Close attention should be paid to all slight hæmorrhages in the last two months of pregnancy. All women with hæmorrhages should be removed to the hospital and treated by rest in bed. To stop the bleeding in placenta prævia, turning is the most effective treatment. The uterus should be allowed to empty itself, even if this takes several hours, and no attempt at extraction should be made except the attachment of a 2 lb weight to the leg to keep it *in situ*.

The cases of antepartum hæmorrhage treated at the East End Maternity Hospital, London, during the years 1925 to 1928 were as follows

Period	Placenta prævia			Accidental hæmorrhage		
	Cases	Maternal deaths	Fetal deaths	Cases	Maternal deaths	Fetal deaths
1925	9	0	2	15	0	5
1926	14	0	10	14	1	7
1927	14	0	10	10	0	5
1928	6	0	0	15	0	4
Total	43	0	22	54	1	21

The author states that the only certain method of preventing sepsis is the full surgical procedure of guarding against the entrance of bacteria by all possible routes. If trauma and exhaustion are avoided and the uterus is completely emptied, the incidence of morbidity will be low. The careful use of low forceps is followed by morbidity no more frequently than normal labor. Sepsis is over 20 times as frequent after abnormal labor as after normal labor and nearly 3 times as frequent in primiparæ as in multiparæ.

In the East End Maternity Hospital and district, London, the incidence of sepsis was as follows

	Hospital		District		Total	
	Cases	Sepsis	Cases	Sepsis	Cases	Sepsis
Normal labor						
Primiparæ	1,769	8	294	0	2,063	8
Multiparæ	2,672	3	3,275	4	5,947	7
Total	4,441	11	3,569	4	8,010	15
Abnormal labor						
Primiparæ	212	11	20	0	232	11
Multiparæ	170	7	74	2	244	9
Total	382	18	94	2	476	20

The incidence of abnormal labor was 5.6 per cent, that of sepsis following normal labor, 0.19 per cent (multiparæ, 0.13 per cent, primiparæ, 0.38 per cent), and that of sepsis following abnormal labor, 4.2 per cent.

Oxley believes that from the standpoint of sepsis the normal case is more safely managed at home. His procedure consists briefly in the prevention of

## ARY SURGERY

adenomata were multiple and varied from 0.5 to 12 cm in diameter. The kidney was markedly compressed, but its function remained normal.

The cause of adenomata of the kidney is not known. It is important to determine whether they are malignant or are capable of undergoing malignant degeneration. It was formerly believed that they are all benign. At present, however, certain pathologists believe they are malignant. The degree of malignancy varies, but usually it is relatively low. In the small adenomata found at autopsy, the degree of malignancy is low, but if the patient had lived long enough a large tumor would probably have developed. The large tumors usually found in younger persons are more malignant and closely resemble adenocarcinomata or hypernephromata. All adenomata of the kidney belong to the so-called hypernephroma type, a fact of importance to the surgeon from the therapeutic standpoint.

As in the authors' case, small tumors may be present in the renal cortex with large tumors. When it is possible to resect the tumor and leave a functioning kidney, this seems to be the procedure of choice. If the possibility of multiple tumors and of malignancy is borne in mind, nephrectomy would seem to be the best procedure if the opposite kidney is normal. It is impossible to determine how long tumors of this type have been present in a kidney. In most cases their growth is probably very slow. A patient subjected to resection of one pole of a kidney for adenomata was known to be alive and well eight years later. Another patient is known to be alive and well two years after nephrectomy for a similar type of neoplasm.

There is no evidence in the literature that the tumors metastasize, but the microscopic appearance suggests that they would do so if they were allowed to grow for a sufficiently long time.

Walters, W. Ureteropyelonephrostomy for Urinary Obstruction at the Ureteropelvic Junction. *Ann Surg*, 1930, xci, 101.

A review of the literature on ureteropyelonephrosis leads to the conclusion that if the anastomosis is correctly made it will function satisfactorily. In the two cases reported by the author a lateral anastomosis was made between the ureter and the dependent portion of the hydronephrotic renal pelvis. A ureteral catheter was used temporarily through the anastomosis to serve as a scaffolding for healing.

In the first case the catheter had been inserted in the ureter in order to decompress the renal pelvis and was there at the time of operation. It was carried into the pelvis through the anastomosis, maintained in place for twenty days, and then removed.



In this case also temporary nephrostomy was done to prevent tension on the anastomosis a No 14 French catheter being used. The catheter was removed on the eighth day.

In the second case, the cause of the obstruction was a dense scar of fibrous tissue at the ureteropelvic juncture. Connective tissue had extended to a point below this, angulating the ureter. When first exposed, the angulation appeared to be the site of obstruction but after it was free, an opening was made in the ureter about 3 cm. distal to this point and a catheter was pushed toward the renal pelvis as a probe. It was then found that the obstruction had not been relieved but existed at the ureteropelvic juncture. When the ureter was dissected to this point, the obstruction was found and a lateral anastomosis was made between the ureter below and the pelvis above. In both cases two rows of chromic catgut were used in making the anastomosis. A ureteral catheter was carried through the anastomosis and out of the incision through the ureterostomy opening and left in place for thirteen days. A nephrostomy tube was also used and removed on the tenth day after the operation.

Infection in the kidney operated on does not seem to complicate the surgical results. Subsequent to operation the degree of infection of the kidneys is diminished and the function of the kidney improved.

#### BLADDER, URETHRA, AND PENIS

Campbell M. F. Cystography in Infancy and in Childhood. *Am J Dis Child* 1930 xxiii 386

Cystography is used relatively infrequently in pediatric cases because of a lack of appreciation of its value and simplicity on the part of pediatricians and the failure of pediatricians to seek the advice of the urologist in the treatment of children with obvious disease of the urinary tract. Without jeopardy to the young patient it is possible by means of cystography to demonstrate vesical diverticulosis various forms of neurogenic disease of the bladder wall and serious involvements of the ureter and kidney.

The procedure is indicated in all urological diseases in infants and children except acute urinary tract infection. All children with pyuria due to pyelitis which persists for four weeks in spite of treatment should be subjected to a thorough urological examination. The longer the urinary disease has been present the greater the likelihood that the cystograms will be abnormal. Neurogenic disturbances of the bladder are commonly associated with enuresis. A palpable suprapubic mass, vesical retention, persistent urinary frequency, difficulty in urination, dysuria and vesical pain when not due to hemorrhagic nephritis always warrant cystoscopic, ureteral catheterization and pyelography. Youth is not a contra indication to these procedures.

The conformation of normal cystograms varies greatly. An important factor influencing it is the degree of filling of the bladder. Other factors include pressure from without by a mass and the position of

the hips before the film. The pathological cystogram is characterized by irregularity of outline, indentation or bulging of the walls of the bladder, evidences of ureteral reflux, or changes about the outlet of the bladder. These conditions may result from infection, diverticulosis, intravesical obstructions, intravesical or extravesical masses and various forms of neuromuscular disturbances.

Bladder infection of marked intensity or long duration is often manifested by haziness or irregularity of the bladder outline. With marked cystitis there may be ureteral reflux on one or both sides depending on the degree of inflammatory involvement of the ureterovesical valve.

Diverticulosis is indicated by characteristic outpocketings of the bladder wall which are best seen in roentgenograms taken from several angles and in stereoscopic roentgenograms.

Ureteral reflux occurs when the ureterovesical valve is functionally damaged. The author has never seen this reflux in normal bladders of children. In some cases it may be congenital. In others it may be due to hypotonia or functional atony of the ureterovesical valve or to back pressure caused by chronic spasm of the sphincter caused by neurogenic vesical disease. In adults, it is occasionally caused by ureterovesical tuberculosis secondary to renal tuberculosis. In children this cause is rare, but non-tuberculous infections are extremely common and may cause reflux as a result of inflammatory infiltration or scarring of the ureterovesical when they are severe or persist for a long time. Ureterovesical reflux may spread tuberculous infection from one kidney to the other. Spastic contracture of the bladder is believed by some to be the most common cause of reflux, but this theory is refuted by the occurrence of reflux in atonic bladders and by its failure to occur in experimental distention of the normal bladder under great pressure.

Obstructions of the lower urinary tract such as contracture of the vesical outlet, valves of the posterior urethra, and chronic sphincterospasm or 'cord bladder' are occasionally observed in infants and children and are usually congenital. Urethral stricture is rare in childhood.

Intravesical growths are evidenced in the cystogram by an irregular filling defect of the bladder cavity. These and extravesical neoplasms or inflammatory masses which compress the bladder or push it to one side are also uncommon in children.

LOUIS NEUWELT, M.D.

Tsaknis D. The Vascular Pedicles and Peritoneum of the Bladder in the Man. (Les pédicules vasculaires de la vessie et son péritoine chez l'homme). *Arch de mal d' reins et d'organes génito-urinaires* 1929 11 442

Tsaknis studied the arteries and veins of the bladder from the purely anatomical point of view, the vascular pedicles of the bladder from the topographical point of view, and the connections of the peritoneum with the wall of the bladder and the

vascular pedicles from the surgical point of view, as they are encountered in the successive steps of ablation of the bladder. This is a detailed work of forty two pages with numerous full page illustrations.

It is shown that the arteries approach the bladder and the veins leave it at certain points where they form the vascular pedicles, two inferior, two lateral, and two anterior. The inferior pedicles contain arteries, veins, nerve fibers, and the ureters, whereas the others are composed of arteries alone. The author's conclusions are as follows:

1 The bladder is irrigated by branches of the hypogastric. The inferior, superior, and ascending anterior vesical arteries are constant or approximately constant. The others, small branches of the vesiculodeferential, middle hemorrhoidal, and prostatic, are inconstant.

2 The origin of the arteries of the bladder is very variable. That of the superior and the ascending anterior vesical arteries is always indirect. The inferior vesical arteries may arise directly from the hypogastric, but in most cases their origin is indirect, by a common trunk with other visceral arteries, particularly the prostatic.

3 The course and relations of the vesical arteries are variable, but their point of approach is approximately fixed for the inferior vesical arteries, the lower angle of the bladder, for the superior, the lateral border of the bladder in its superior segment, for the ascending anterior the antero inferior surface of the bladder in its inferior segment, and for the inconstant branches, the inferior border of the bladder.

4 After reaching the bladder, the vesical arteries usually anastomose with one another but the anastomoses formed before the vessels reach the bladder are relatively few. Among the former, those that join the ascending anterior and the inferior vesical arteries bring about communication between the pelvic and the visceral arterial systems.

5 The veins of the bladder are classed in three groups, the anterior, the lateral and the posterior. The venous blood is conducted from the bladder into the pelvicplexus which is formed of four plexuses, the plexus of Santorini, the vesical and seminal plexuses, and the lateral plexus of the prostate.

6 These plexuses communicate with the middle hemorrhoidal plexus and, through the latter, with the inferior and superior hemorrhoidal plexuses. In this way an important anastomatic route is established between the portal and the caval systems.

7 The confusion in the nomenclature of the plexuses mentioned is due to the different combinations made by different investigators in associating one plexus with another. To obviate this confusion the pelvicplexus system must be described as formed by four plexuses: the unpaired plexus of Santorini and the paired prostatic, vesical, and seminal plexuses.

8 The blood of the venous plexuses, and consequently of the bladder, is collected by the emis-

sary veins, which are the internal pudic, the inferior vesical, and the middle hemorrhoidal veins.

9 From the topographic point of view, the vessels of the bladder form six constant pedicles besides a few inconstant pedicles that approach the bladder at its inferior border.

10 The peritoneum of the bladder is adherent to the allantoic sheath over the entire postero-superior surface of the organ, but these adhesions do not cause any difficulty in detachment of the peritoneum.

11 When the vesical peritoneum is detached, the allantoic sheath with which it is in contact comes away with it and the rest remains adherent to the bladder.

12 The process of detaching the vesical peritoneum is particularly easy in the case of bladders with a thick allantoic sheath, but it is easy even when the sheath is thin.

13 Subperitoneal ablation of the bladder, completed if necessary by prostatectomy, can be performed with ease if the procedure is based on characteristics of the vesical blood vessels and peritoneum which have been reviewed.

FLORENCE A. CARPENTER

De Berne Lagarde. Vesical Leiomyomata (Les leiomyomes vésicaux). *Arch. d. mal. d. reins et d. organes génito-urinaires*, 1929, 11, 412.

The author reports a case of leiomyoma of the bladder, discusses this tumor from various standpoints, and reviews the literature. His patient was a forty two year old woman. Fourteen years ago she had had a labor which necessitated the application of forceps and was followed by puerperal infection. The disturbance regarding which she consulted the author began about seven years ago with progressive painless dysuria. The urine was clear at all times and never contained blood. Micturition was no more frequent than normal, but required so great an effort that a cystocele developed. The cystocele was corrected by perineorrhaphy, but the dysuria increased until it reached complete retention, necessitating catheterization several times a day. The patient had been in this state for two months when the author saw her. After several seconds of straining in an unsuccessful effort to urinate, a smooth, round, slate colored tumor, the size of a cherry, protruded from the meatus. It was entirely painless and could be easily replaced in the ureter. The investigating finger found the ureter greatly dilated and penetrated into the bladder without causing the slightest pain. There it encountered a tumor shaped like a pendulum, with a slender pedicle inserted close to the neck posteriorly and to the left of the midline.

On urethroscopic examination the bladder was found normal. The tumor was about 6 cm. long and had a bulging free end. The mucosa covering it was free from ulcerations and vegetations. The circumference of the bladder neck was normal.

The tumor was removed surgically with section of the pedicle. Healing was smooth, and twenty eight hours after the operation the patient was able to urinate freely. Slight incontinence which persisted for a time was attributed to the abnormal distention of the ureter and the neck of the bladder by the tumor. This gradually ceased.

Histological examination of the neoplasm showed it to be a typical leiomyoma. Slight infection was evidenced by the presence of disseminated leucocytes.

Myoma of the bladder is rare. In 4 collections of bladder tumors, aggregating 1,220 neoplasms there were only 5 myomata. The author has collected 35 microscopically confirmed cases from the literature. In 26 the tumor was submucous. Such neoplasms may be sessile, but usually end by becoming pedunculated. Their most usual site is the region of the trigone. Peripheral myomata develop in the lesser pelvis. Their surface is likely to be lobulated. Accessory tumors may grow from them. They have been found co existing with uterine myomata. Such tumors may cause trouble by pressing upon neighboring organs. They may disturb the development of the uterus during pregnancy and may constitute an obstacle to delivery. Calcification and oedematous and epithelial degeneration of vesical myomata have been described. Sarcomatous degeneration is possible, but myosarcoma of the bladder may also be primary. The symptoms of interstitial myomata are not discussed as too few cases have been reported to allow an adequate study.

Peripheral myomata remain symptomless for a considerable time. When pressure symptoms appear they are not pathognomonic and are likely to be ascribed to tumor of some other pelvic organ. Casanelli describes a symptom which seems to belong especially to peripheral myomata, and has its analogue in cases of uterine fibromyomata viz an increase in the anteroposterior diameter of the vesical cavity measured with Guyon's metallic explorer. In the only case in which cystoscopy has been done the bladder appeared flattened on both sides and particularly on the right side.

Intravesical (cavitary) myomata on the other hand rapidly cause symptoms referable to the bladder: dysuria, frequent micturition, hæmaturia, and pain. Dysuria varies widely in intensity in different cases. Pollakiuria may depend on a concomitant cystitis or on the fact that the tumor acts as an irritating foreign body. Pain may be very severe in some cases; it has come on at the time of defecation. Hæmaturia is almost constant but is a late sign. In women bimanual palpation furnishes valuable information. Cystoscopic examination shows a round, smooth, regular sessile or pedunculated tumor. The evolution of the neoplasm is extremely slow. Renal complications from pressure on the ureters may result from vesical myomata.

For intravesical myomata ablation by hypogastric cystotomy is the treatment of choice. Peripheral myomata should be treated in the same manner

as subperitoneal pelvic tumors. More or less wide resection of the bladder wall is necessary. The immediate results of surgical treatment of myoma of the bladder are favorable. The mortality is about 15 per cent. Little is known as to the late results.

FLORENCE A. CARPENTER

**Montenegro A. A Malignant Tumor of the Bladder in a Boy Three Years of Age** (Tumoral maligno de vejiga en un niño de tres años) *Semana Méd.* 1930 *VXXIV*, 245

About two months before he was seen by the author, the child whose case is reported became unable to urinate without great effort and began to complain of pain in the penis during urination. His bladder filled until it reached the umbilicus, but after urination he was free from pain and discomfort. Twice he had passed a few drops of blood at the beginning of urination. He urinated four or five times at night and sometimes had both day and night incontinence of urine. On admission to the hospital he looked well and had a healthy color.

General examination revealed syndactylia of the second and third toes of both feet, and absence of the testicle in the left side of the scrotum. Examination of the urethra and prostate was negative. The kidneys were neither painful nor palpable. Cystoscopic examination showed a tumor on the left side which filled a third of the cavity of the bladder. The neoplasm was removed and its base and some suspicious looking trabeculae were cauterized. The wall of the bladder was very friable and broke down when attempts were made to suture it, the operation being thereby prolonged and rendered very difficult.

For a few days after the operation the patient progressed well, but at the end of that time his general condition began to grow worse and at the end of a month and a half a large, hard tumor appeared in the lower part of the abdomen. Death occurred two months after the operation.

Histological examination of the tumor showed it to be a myxosarcomatous polyp.

AUDREY G. MORGAN, M.D.

**Ballenger E. G. Elder O. F., and McDonald H. P.** Concerning the Diagnosis of the Rarer Types of Obstructive Lesions in the Male Urethra. *J. Urol.* 1930 *XXII*, 259

The authors call attention first to the normal variations in the caliber of the urethra. They reject the theory of Otis that the external circumference of the penis has a direct relation to the size of the urethra. They state that a small external urinary meatus may be the cause of hernia because it necessitates increased effort in voiding. It may be responsible also for obstruction to the passage of ureteral calculi because it is frequently associated with narrow ureteral orifices.

Urethral strictures may be congenital or acquired. Acquired strictures may be subdivided into those due to inflammation, those due to trauma, those due to the action of chemicals, and those due to

burns The authors discuss the local, urinary, and sexual symptoms with emphasis on neuroses and changes in the posterior urethra

Two sources of error in the diagnosis of urethral stricture are the normal narrowing and difficulty in urination or retention of urine caused by lesions in the posterior urethra other than stricture

The absence of a urethral stricture can be proved only by examination with bulbous instruments In the use of sounds, valve like formations are more readily overlooked

Spasmodic contractions of the external sphincter may be mistaken for urethral stricture and some times can be ruled out only by the induction of general anesthesia

Urethral tumors are relatively rare and always secondary to disease elsewhere in the genito urinary tract In cases of tuberculous stricture there is danger of miliary tuberculosis following instrumentation The diagnosis is usually based on frequency of urination, tenesmus, a discharge, and tenderness in the urethra

The authors describe the three stages of urethral syphilitic lesions

Carcinoma of Cowper's gland is extremely rare It usually extends toward the perineum and rectum, causing obstruction as a late complication

Urethral calculi and diverticula are discussed

Congenital valves or folds occur in the posterior urethra

Hypertrophy and tumors of the verumontanum are mentioned as possible causes of urinary obstruction

A case is cited in which urinary obstruction was caused by a third ureter which opened into the posterior urethra just back of the verumontanum

In conclusion, the authors state that lesions in the urethra are readily recognized by urethroscopy if the irrigating type of urethroscope, preferably McCarthy's pan endoscope, is employed

J SYDNEY RYTTER, M D

## GENITAL ORGANS

Caulk, J R Obstructive Lesions of the Prostate  
Influence of the Author's Cautery Punch Operation in Decreasing the Necessity for Prostatectomy *J Am M Ass*, 1930, xciv, 375

When examination of the prostate includes microscopic examination of the secretion of the gland as well as palpation, surgery may frequently be avoided Some of the smallest and softest prostates have the most purulent contents When early obstruction becomes manifest, it should be prevented from progressing by lesser surgery

The author's results indicate that his cautery punch operation can cure at least 85 per cent of prostatic obstructions to which it is applied When the instrument is understood, even large growths may be grasped if firm pressure is made When the interference with the sphincter is relieved and drainage areas are made in the gland, retrogression of the

obstruction by absorption takes place and the relief seems to be as permanent as that following enucleation After prostatectomy, a lobule left in the capsule falls directly into the sphincter area, whereas after the author's operation, in which the prostate remains undisturbed in its general relationship, this cannot occur and with relief of interference within the sphincter the inflammatory reaction subsides The result is comparable to the relief of inflammation of the eye after the removal of a small cinder Intra urethral lobes can be removed under vision without danger In carcinoma, shrinkage of the gland by means of high-voltage roentgen therapy and relief of obstruction by the transurethral technique is far superior to open surgery except in early cases in which total prostatectomy is possible

The author's operation has been found of value in hastening the closure of indolent suprapubic fistulae It was employed also for the removal of obstruction in nine cases in which suprapubic cystotomy had been done as a first stage operation, but the obstruction was not removed, usually because of a serious complication In all of these cases the surgeon who performed the operation stated that the prostate was large and enucleation was thought necessary, but when the patients came under Caulk's observation the obstruction had shrunk to such a degree that the punch operation was entirely effective not only in closing the fistula, but also in removing the obstruction

The cautery punch operation is simple and is done under visual control It is associated with little danger, but requires proper interpretation of the orifice picture and patience in the after treatment The complications are few and the mortality is negligible

C TRAVERS STEPITA, M D

Larson, L W Embryonal Carcinoma of the Testicle *J Lab & Clin Med*, 1930, xv, 332

Testicular tumors are comparatively rare, their incidence being between 0.05 and 0.063 per cent in all males admitted to hospitals They constitute 0.6 per cent of all malignant tumors in men

In 1897, Langhans and Kocher advanced the opinion that most testicular tumors are teratomata Stevens and Ewing have recently reported a case of adenocarcinoma of the testis, and Bell has reported four such cases It appears that testicular tumors may be of two types—the embryonal carcinoma and the adenocarcinoma Ewing classifies these tumors as follows (1) adult embryomata or teratomata, (2) embryoid, teratoid, or mixed tumors, and (3) embryonal malignant tumors Adult embryomata constitute a very small group of testicular tumors They are similar to dermoids of the ovary and are cured by simple orchectomy Embryoid, teratoid, or mixed tumors constitute about one half of the malignant testicular tumors and are very malignant Embryonal tumors of the testicle, which include the seminoma of Chevasu and a majority of the tumors reported in the literature as sarcoma and embryonal carcinoma, constitute slightly more than half of the

malignant tumors of the testicle. Grossly, these tumors consist of a homogeneous white or grayish white tissue divided into lobules with numerous areas of necrosis and small points of hemorrhage. They are usually large but may be small and scirrhous. Microscopically, the cells are large and spheroid and their nuclei have a powdered appearance. The stroma tends to be lymphoid in type. The resemblance of these cells to those of sarcoma is very apparent.

Traumatism probably favors the growth of testicular tumors but in Chevassu's opinion its importance has been exaggerated. This is perhaps true also of undescended testicle. Most tumors of the testicle occur during the age of sexual activity. One testicle is as likely to be involved as the other, but bilateral involvement is rare.

All teratomata, whether mixed or embryonal, are malignant and eventually metastasize, first along the spermatic lymphatics and veins, then into the lumbar nodes, the coeliac axis and the mediastinal nodes, and finally into the cervical nodes. In the differential diagnosis inflammatory conditions, hydrocele, spermatocele, tuberculosis, and gorrnia must be ruled out.

Malignant testicular tumors are considered to be the most malignant neoplasms known. The prognosis is especially unfavorable in children. Several methods of treatment have been advocated. Simple orchiectomy is curative if metastases have not occurred (from 10 to 15 per cent of cases). Hinman and others have recommended a more radical operation in which the lymph zones in the retroperitoneal and lumbar areas along the aorta and vena cava are dissected out. Radium and X-ray therapy have been used either alone or as an aid to surgery. Ewing recommends X-ray treatment for a time before and after orchiectomy.

The author reports six cases of embryonal carcinoma of the testicle. CLAUDE D. HOLMES, M.D.

Brines O. A. Malignant Neoplasms of the Testis. *J. Lab. & Clin. Med.* 1930 15: 464.

Brines first reviews current theories regarding the nature of malignant tumors of the testis. Ewing believes that all malignant tumors of the testis are teratomata, whereas Chevassu is of the opinion that while a large number are teratomata, an equally large number are spermatoctomata, neoplasms composed of homologous epithelial cells and presenting no evidence of teratomatous elements.

Thirty-two malignant neoplasms of the testis were studied by Brines. When the original sections were re-examined on the basis of an accepted classification, an equal number of teratomata and spermatoctomata were found, but later when from six to fifteen more blocks taken from each specimen were studied it was necessary to remove six tumors from the spermatoctoma group and place them in the teratoma group. The fact that the examination of a sufficient number of sections usually revealed heterologous elements or one type of cell proliferat-

ing to the complete or nearly complete obliteration of other cells originally present seems to prove Ewing's contention that the tumors are only apparently homologous epithelial neoplasms.

Brines discusses the histogenesis of malignant tumors of the testis in detail. He concludes that all of these neoplasms are mixed tumors. Instead of classifying them as teratomata, he prefers to call them embryonal carcinomata. He believes it reasonable to assume that they arise from very young sex cells which are still totipotent, i.e., capable of producing cells of any order and therefore capable of giving rise to heterologous elements. His theory is strengthened by the established fact that mixed tumors of the testis are more malignant than the so-called spermatoctomata. This fact may be interpreted as indicating that mixed tumors are derived from very young germ cells capable of producing ectodermal and endodermal tissue, and that the homologous nature of some of them is due to the development of new growth characteristics in the misplaced germ cells after the limits of totipotency of these cells have been reached.

The article contains eleven photomicrographs of malignant tumors of the testicle.

J. EDWIN KIRKPATRICK, M.D.

## MISCELLANEOUS

McCurich H. J. Retention of Urine. *Brit. M. J.*, 1930 1: 192.

The causes of retention of urine include pinhole meatus, phimosis, a congenital fold in the posterior urethra, acute urethritis, prostatitis, abscess, reflex spasm from inflammation in an adjacent organ, trauma, overdistention, hysteria, stone, stricture, tuberculous, hypertrophied prostate, atony, vaginitis, urethritis, displacement or enlargement of the uterus, prolapse of the urethra, caruncle, and nervous disease.

Retention with an overflow may be mistaken for incontinence and complete retention for suppression. The differential diagnosis may be made with a catheter. Retention may be partial or complete. In partial retention the amount of residual urine will determine the degree of obstruction. If the obstruction is at the neck of the bladder there will be an overflow when the intravesical pressure reaches a certain point. If the obstruction is in the urethra extravasation of urine will result. Obstruction is followed by bladder trabeculation and dilatation of the ureters and renal pelvis with destruction of tissue and function.

The history will often help in the diagnosis. The treatment of congenital lesions is obvious. In retention due to inflammation or reflex spasm, the cause must be treated. Hot baths, hot applications and the administration of morphine, atropine, and calcium chloride may be indicated. Strictures should be treated under either local or spinal anesthesia. Extreme care must be taken not to make a false passage. The author prefers small heavy sounds to

the gum elastic bougies. If the stricture is impassable, suprapubic drainage with a fine needle may be done. In the treatment of strictures not suitable for dilatation, resilient strictures, and strictures that bleed easily and in the treatment of periurethral abscess, internal urethrotomy may be indicated.

In doing an external urethrotomy, the author passes a sound into the posterior urethra through a suprapubic incision. The stricture is readily located between this sound and a sound passed through the meatus. The ends of the two sounds are joined through a perineal incision. A No. 12 tube is passed through the entire urethra into the bladder. Each end is safeguarded with a safety pin. A large opening is made in the tube for bladder drainage. The tube is left in place for several days. In order to decrease the chance of urethritis, it is moved to and fro daily by means of the safety pins.

For catheterizing a patient with an enlarged prostate, McCurrich prefers Tiemann's catheter. This is a soft rubber catheter with a solid rubber tip which is turned up at the end so that it will ride over the prostate. Rectal palpation, urinalysis, and cystoscopic examination are required for the diagnosis of prostatic enlargement. CLAUDE D. PICARELL, M.D.

Hellstrom, J. The Importance of Staphylococci for the Production of Urinary Concretions. *Acta chirurg. Scand.*, 1929, lxxv, 545.

Staphylococcal infections of the urinary tract, especially the chronic forms of staphylococcuria, often lead to the formation of calculi consisting of phosphates and carbonates with an organic nucleus of staphylococci.

The stone formation is due mainly to the ability of the staphylococci to decompose urea, thereby creating a reaction favorable for the precipitation of the alkaline salts.

In every case of staphylococcuria the possibility of concretions should be borne in mind.

Examination of the organic substance of urinary concretions may be of importance in the determination of the genesis of the stones.

The treatment of staphylococcal calculi should be directed not only against the concretions, but also against their cause, the staphylococci.

It is of very great importance to arrest staphylococcal infection of the urinary tract before stones have had time to form because after the formation of stones the chance for complete recovery is relatively slight.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Belmonte A Analogies Between Various Aseptic Bone Necroses (Ueber Analogien bei verschiedenen aseptischen Knochennekrosen) *Nederl Maandschr v Geneesk*, 1929 xvi, 301

In the last twenty years a series of local bone diseases have been described the etiology of which is still obscure. Among these are Legg Perthes disease, Koehler's disease, Schlatter's disease, and a large number of similar conditions presenting the picture of a softening or necrosis of bone or cartilage. Many attempts have been made to consider these diseases from a single point of view.

All of them are strictly localized and they all have a rather constant age incidence. They often develop symmetrically at short intervals and sometimes occur more frequently in one sex than the other. Their course is always clinically aseptic, and they appear and disappear gradually. Their duration is limited. Except for secondary static changes they always show a tendency toward complete anatomical cure. Roentgen examination reveals three stages characterized respectively by changes of form, destruction and thickening. The pathologic anatomical pictures are similar, showing primary bone necrosis, regeneration from the periphery, normal surrounding bone, medullary cavities filled with fat marrow, normal joint cartilage, numerous bony islands in the bones, absence of signs of inflammation, and frequently the presence of endarteritis obliterans.

According to Axhausen the causes are emboli of mycotic origin. Mueller and Lexer reject this theory on the basis of the findings of experiments and Nussbaum rejects it on the basis of anatomy. The clinical picture seems to rule out infection. Americans have suggested that focal infection is responsible but this has not been proved. Gastrich blames vascular changes of unknown origin. Nussbaum suggests that the bone condition is the result of a total necrosis with resorption and regeneration but he does not explain the origin of the necrosis. In Fromme's opinion, the osseous changes are the result of late rachitis, but the signs of such a condition are lacking. Sandor believes the cause is a disturbance of internal secretion but this theory is to be rejected on the basis of clinical studies. The proponents of a traumatic genesis may be divided into two groups—those who assume that a direct trauma is responsible and those who believe that local disturbances cause hypersensitivity to normal stimuli. If the traumatic theory is accepted, a separate injury must be ascribed for each bone.

Calot attributes Legg Perthes disease to congenital subluxation of the hip, Murk and Jansen, to

the influence of a small amniotic sac and coxa plana, Kræsten Lange and Goecke, to tissue injury by trauma. These theories do not account for the frequently observed bone powder. Mueller caused aseptic necrosis experimentally by trauma without finding an explanation for it. Arteritis obliterans has been advanced as a cause of the bone disease by Vana, Koenig, Konjetzny, Holst, and Chadrikav. According to Roesner, Koehler's disease is due to venous stasis. Aschoff attributes the condition to high blood pressure from flexion trauma. Payr believes the vascular disturbances are the result of rotation, whereas according to Jaroschy, the vascular changes occur simultaneously with the changes in the bone. Zayer is of the opinion that the cause is a crushing of the vessels during the stage of growth when, according to Murk and Jansen, they are especially susceptible to injury. He has demonstrated islands of cartilage in the head of the femur and agrees with Lenormant that the cause is a congenital dystrophy in the sense of familial multiple exostoses. This theory also is unsatisfactory as it does not explain for instance normal roentgenograms before the development of Legg Perthes disease or malacia of the lunate bone in adults.

Belmonte says that, in a consideration of the common characteristics of the different clinical syndromes the picture of a "physiological" disease becomes evident. He advances the hypothesis that there is a physiological endarteritis obliterans of vessels that have become unnecessary with replacement of such vessels by new branches, and that failure of the latter to appear leads to a developmental disturbance. C. E. JANCKE (2)

Junghagen S Spondylitis Deformans with Medullary Symptoms (Spondylitis deformans mit medullären Symptomen) *Acta radiol*, 1929 x 533

The author reports a case of spondylitis deformans with neurological symptoms due to the ingrowth of exostoses into the spinal canal. The myelographic examination was made according to the method of Odin and Rundstrom.

Joachimovits R The Differential Diagnosis of Tuberculosis of the Pubic Bone in the Female and the Paths by Which the Abscess Spreads in This Disease (Ueber die Differentialdiagnose der Schambeintuberkulose beim Weibe und ueber die Wege der Abscesswanderung bei dieser Erkrankung) *Deutsche Zeitschr f Chir*, 1929 ccxix, 257

The author reports seven cases of tuberculosis of the os pubis and discusses the differential diagnosis of the condition and the paths by which the abscess spreads. He states that since the comprehensive report of Bucura in 1919, thirty six cases have been

described. The knowledge of the disease has been considerably increased by the roentgenogram. In the interpretation of the roentgenogram certain sources of error must be borne in mind. Air bubbles in the intestine occasionally project themselves into the picture of the symphysis, suggesting light areas in the bone.

The most frequent localization of the disease is the superior ramus of the os pubis. As a rule the infection arises in an embolic manner. If, with abscess formation, the swelling occurs in the suprapubic region or the labia, it is necessary to consider in the differential diagnosis not only osteomyelitis and lues but also inguinal hernia and primary tumors and their metastases. Not rarely the disease appears after childbirth. Latent disease may be manifested first by spontaneous rupture of the symphysis during labor. In eleven of the cases of spontaneous rupture of the symphysis reported in the literature, tuberculosis of the os pubis was present.

The spreading of the abscess proceeds, according to the localization of the hone focus, along definite paths. Foci on the ventral side of the ascending ramus send their pus toward the median side of the thigh in the prolongation of the gluteal fold. More rarely, the pus perforates between the adductors. Abscesses arising in the dorsal side of the ascending ramus of the os pubis reach the ischio-rectal fossa and then perforate laterally from the anus. In involvement of the horizontal ramus of the os pubis similar differences are noted according to whether the hone focus lies on the ventral or the dorsal side. Abscesses formed on the ventral aspect send their pus, when the focus lies laterally, between the adductors. From hone foci lying medially, which are more frequent, the pus gravitates toward the region of the labia and a portion of it may then extend upward between the fascia of the rectus muscle and the abdominal wall and perforate externally in the region of the mons veneris. When the focus has an exactly median location, the pus may collect in both labia or appear along the dorsal vein of the clitoris in the region of the clitoris. Abscesses arising on the dorsal aspect of the horizontal ramus of the os pubis reach the floor of the pelvis through the space of Retzius. In rarer cases they penetrate through the levator ani muscle into the ischio-rectal fossa and then externally. More often they halt in the ischio-rectal fossa and, after filling the prevesical space, rise behind the rectus muscle and appear as a painful swelling above the symphysis. As the deep location of the collection of pus renders external perforation impossible at this site, the pus may extend from the prevesical space through the umbilico-vesical fascia into the paravesical space and may be confused with primary abscess of the parametrium. Occasionally abscesses of this type perforate into the bladder.

About 70 per cent of the cases reported were cured by surgical measures—extirpation of the fistula and the removal of sequestra—supplemented by the usual conservative treatment. **COXKALIS (2)**

**Tobler, T.** Macroscopic and Histological Findings in the Menisci of the Knee Joint at Different Age Periods (Makroskopische und histologische Befunde am Kniegelenk meniscus in verschiedenen Lebensaltern). *Schweiz med Wchnschr*, 1929, 11, 1359.

The author studied 400 menisci from 100 cadavers ranging from those of nurslings to those of persons eighty-six years old, and, in addition, several menisci which had been removed at operation because of injury. The findings of Ishido and Mandl were in general substantiated. Degenerative changes were found to occur very early. Most frequent was fatty degeneration (67 per cent of the cases). This form of degeneration could be demonstrated as early as the fifteenth year. The menisci of all persons more than thirty two years of age showed more or less fatty degeneration. Mucoid degeneration was also noted frequently (50 per cent of cases) and as early as the sixteenth year. In the menisci of persons more than thirty seven years of age it was found constantly. Often the cartilage had disintegrated in places so that ganglia were formed, especially in the lateral meniscus. Equally frequent was fibrillar degeneration. Calcification was found in 25 per cent of the menisci. The youngest subject with calcification was sixteen years of age. In about 30 per cent of the menisci, hyalinization of the fibrous bundles and matrix could be demonstrated. Midway on the meniscus, close to its attachment, an oedematous swelling of the fibrillar bundles was frequently seen. Fibro-cartilaginous necrosis and necrosis of the cartilage cells were also demonstrated often.

In the menisci of persons more than thirteen years of age a single form of degeneration was rare, nearly always, combinations of different types of degeneration were found. No difference in the frequency or severity of involvement of the inner and outer meniscus could be determined. Inflammatory processes in the menisci were seen only very rarely.

The degenerative changes are the result of frequent and long continued minor traumata and poor vascularization. Even a considerable change in the menisci does not produce subjective symptoms.

In the discussion of this report, ISELIN opposed the operation of cutting through the lateral ligaments of the knee because the studies of Enderlein have shown that the ligaments do not begin to regenerate until after three or four weeks. He stated that Payr's incision is entirely sufficient. The part of the meniscus which is still firmly attached should be left intact. He emphasized that internal injuries of the knee should be treated at operation as conservatively as possible. In three cases, Iselein fixed a torn off crucial ligament back onto the tibia with short nails. The prognosis is good, spontaneous cure with a good result can be demonstrated in the roentgenogram. Arthritis deformans is the result of wear and tear. It is in the main a disease of the laboring classes, but is dependent also on age and constitution. Traumatic arthritis has a good prognosis when the trauma does not leave a source of chronic irritation. As a rule it becomes cured in one or two years.



Roux stated that he always attempts to alleviate the condition by massage before resorting to arthrotomy.

Duns emphasized that arthritis deformans is not indicated by every small irregularity of the joint contour. He stated that he performs meniscectomy under local anesthesia. L. Lutz (Z)

Henschen, C. The Blood Vessels of the Menisci of the Knee Joint. Anatomical and Physiological Characteristics of the Knees of Mountaineers (Gesamtvorsorgung der Kniegelenkmenisken. Anatomisch physiologische Eigenheiten des Bergkniegelenkes). *Schweiz. med. Wochenschr.* 1929 II, 1366.

In the normal interarticular cartilage there is a parameniscal artery at the capsular insertion of the meniscus from which, in the middle two fourths of the cartilage, small arterial branches enter in a radial direction to supply the outer third of the meniscus. The most anterior quarter shows a rich arterial plexus formed by the capsular arteries and the vessels of the crucial ligaments which, in the first two thirds of this segment, supplies the entire width of the meniscus and in the posterior third somewhat less than half of the meniscus. The posterior quarter of the meniscus has a similar blood supply but is less vascular.

In old persons the radial internal blood vessels of the meniscus, even those in the middle two fourths, advance toward the free edge. The arteries of the menisci become involved in severe sclerotic and degenerative changes of the arterial trunks.

In native Swiss people the knee joint surfaces of the tibia are much more deeply excavated than those of people living on the plains. Other characteristics of the knee of mountaineers are a somewhat deeper or thicker layer of cartilage in the deeper excavation of the head of the tibia, a more marked tendency toward a posterior position of the tibial head, a steeper and more marked prominence of the intercondylar eminence, greater thickness of the menisci, particularly in the posterior aspect, greater width of the condylar zone of the femur and tibia, greater height of the so called roentgenological joint space, i.e. more marked cartilaginous covering of the femur, tibia and patella, shortening of the sagittal length of the femoral condyles, particularly the external condyle, a deeper position of the patella, a slighter valgus position, and a flattening of the sagittal curve of the femoral condyles in the anterior and posterior profile of the arch. As an adaptation to the mode of walking required in mountainous regions the knee joint of the mountaineer is more forcibly closed by ligamentous and muscular power than the knee joint of the inhabitant of the plains.

In addition to the greater demands made upon the knee in mountainous countries, the anatomical and physiomechanical characteristics of the knee joint of the mountaineer explain the greater frequency of injuries to the meniscus in inhabitants of mountainous regions as compared with persons living on the plains. S. Frey (Z)

Bircher, E. Internal Injuries of the Knee Joint (Die Binnenerkrankungen des Kniegelenkes). *Schweiz. med. Wochenschr.* 1929 II, 1292, 1309.

Bircher says that further studies should be made of the anatomical and physiological characteristics of the knee joint. A comparison of roentgenograms shows several differences in the knee joints of persons who live in mountainous regions and those who live on the plains. In injuries of the menisci, sex, age and occupation play a rôle. Constitutional tendencies (weakness of the joint, a tendency toward arthritis, and endocrine influences) are also factors. Susceptibility to traumatic lesions may be increased by weakness of the menisci caused by disease, continued trauma, or over work. The pathological histology of the menisci should be studied in greater detail. Roentgenograms should be interpreted with great care. The signs of arthritic changes in the roentgenogram do not warrant conclusions as to the presence or degree of involvement of the knee joint. Injection of air into the joint is not of much aid. More attention should be paid to auscultation of the joint. Attempts to explain functional processes such as studies on the cadaver, should be evaluated with great care in theoretical discussions.

Operations on the menisci should be as conservative as possible. Partial resection is sufficient. According to the author's experience and the cases reported in the literature, the results of this procedure are very favorable. Disimilar material of different surgeons should not be used as a basis for conclusions. The very frequent combination of several different internal injuries and constitutional factors may be considered indications for early operative intervention.

As a result of the greater frequency of operation on the knee joint the diagnosis of injury of the crucial ligaments is being made more frequently. Severe injuries of the crucial ligaments are serious, but their operative treatment gives good results.

Hoffa's disease of the fat pads may occur as an independent condition, but as a rule is combined with internal injuries. Operative treatment gives good results. The so called chondroses of the knee joint (Laewen-Budinger chondropathy of the patella, osteochondritis, chondromatosis) are not yet completely understood. They are somehow related to trauma. They are amenable to operative treatment. S. Frey (Z)

Laewen, A. Osteochondritis Dissecans of the Talocrural Joint and Its Surgical Treatment (Ueber Osteochondritis dissecans am Talocruralgelenk und ihre operative Behandlung). *Zentralbl. f. Chir.* 1929, p. 2498.

The author reports an extremely instructive case of osteochondritis dissecans of the tibiotarsal joint. Only fifteen cases of this type are on record as the disease usually attacks large middle joints with long lever arms such as the knee and elbow.

Laewen a patient was a woman thirty nine years of age who gave a history of pain in the left foot for

fourteen years which had developed without previous trauma. In front of the external malleolus there was an area which was tender to pressure, and in the region of the trochlear surface the roentgenogram revealed a circumscribed bone focus, the size of a bean, which began somewhat medialward from the center and extended to the internal border.

The joint was incised with temporary resection of the internal malleolus and temporary division of the tendons of the tibialis posterior and the flexor longus digitorum, and after sufficient pronation of the foot, the smooth walled bony body was lifted out of an absolutely smooth bed together with the attached articular cartilage. Histologically, the cartilage was alive, but the bone was dead. After three months the mobility of the ankle was again normal, but severe pain still persisted internal to, and below, the external malleolus.

Osteochondritis dissecans occurs most frequently in the trochlear surface of the astragalus and much more rarely in the articular surfaces of the tibia and fibula. It may develop at any age. It occurs after external force and also without such force. When the loosened portion of bone is situated on the articular surfaces of the leg bones it is completely extruded, but when it is situated on the trochlear surface its extrusion is prevented by the closure of the joint. Spontaneous recovery occurs in the astragalocalcaneal joint as rarely as elsewhere. The best method of treatment is operation. MAX BRUCE (Z)

## SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Samarin, N. End Results of the Treatment of Ankylosing Polyarthritis by Parathyroid Extirpation (Dauerresultate der Therapie der ankylosierenden Polyarthritis durch Parathylokoerperchen extirpation). *Verhandl. d. russ. Chir. Kong.*, 1929, p. 111.

According to the investigations of Oppel and his school, most cases of ankylosing polyarthritis are characterized by an increase in the blood calcium, and the inorganic blood phosphorus, an increase in the viscosity of the blood with a normal blood calcium, and a decrease of the electrical excitability of the muscles. Oppel believes that the disease is related to hyperfunction of the parathyroid glands which is manifested clinically by the increase in the blood calcium, the decrease in the electrical excitability of the muscles, and the well known joint symptoms. As treatment he therefore recommends parathyroidectomy with simultaneous right hemithyroidectomy.

In the course of two years fifty five cases were treated in this way. It was found that in the spine, three types of the disease are to be differentiated: spondylitis deformans, spondyloarthritis ankylosica, and mixed forms. In the six cases of the first type in the series reviewed the parathyroidectomy was without effect, a fact which indicates that spondyloarthritis deformans is a distinct nosological entity.

In the forty nine other cases the operation was done for polyarthritis ankylosica. The results in thirty cases after from seven to nineteen months are reported. One patient died after a year, seven had relapses, six showed no change after the operation, and sixteen reported improvement. In one case of recurrence a year after the operation the calcium of the blood was increased to 11.2 mgm. per 100 c.c. although immediately after the operation it was only 9.8 mgm. It is possible, however, that the parathyroids were not extirpated in the operation. The six cases in which the operation was followed by no change demonstrate that the otherwise advancing disease was at least arrested.

The operation itself is harmless, there were no deaths resulting from it. However, in several cases an unpleasant hoarseness was caused by trauma to the inferior laryngeal nerve.

The author concludes that parathyroidectomy is contra-indicated in cases of typical polyarthritis deformans, but is to be recommended for polyarthritis ankylosica.

In the discussion, MOLODAJA (Tejkovo) reported an excellent immediate result after Oppel's treatment in a typical case of rhizomelic spondylosis. The pain ceased and the patient was restored to full working capacity from a state of invalidism.

GOLJANSKIY (Moscow) reported on three cases—an early case of spondyloarthritis ankylosica with a successful result, a case of spondyloarthritis deformans with no result, and a case of severe rhizomelic spondylosis with total ankylosis of the spine and of both hips in which, four months after the operation, the pain had ceased and there was free motion of the hands and of one thigh.

KUZNECOV (Garodec) reported on three cases of polyarthritis ankylosica treated surgically. In two, there was no improvement although there was no advance of the condition during a period of a year. In one, there was very definite improvement.

BOBROV (Voronez) reported prompt and very considerable subjective and objective improvement after operation in a moderately severe case of spondyloarthritis ankylosica. J. KORMANN (Z)

## FRACTURES AND DISLOCATIONS

Frantz, R., and Mayer, M. Biological and Experimental Contributions Relative to Osteosynthesis by Cuneo's Method (Quelques données biologiques et expérimentales relatives à l'ostéosynthèse par l'appareillage du Professeur Cuneo). *Presse méd.*, Par., 1929, xxxv, 1616.

The authors studied the biological reaction of bone to the metal clips and wire employed by Cuneo and in other materials used for osteosynthesis. Their experiments were carried out on dogs. They found that Cuneo's material was well tolerated, provided infection did not occur. The periosteum reformed rapidly. The greater the operative traumatism the thicker the periosteum. Microscopic examination showed a reaction of the bone even when tolerance

seemed perfect. In the periosteum there was cellular infiltration with metallic masses and in some instances newly formed spongy trabeculae were found. In the compact bone there were signs of bone resorption around the material. In the marrow, the formation of a spongy framework around the teeth of the slips was noted constantly. The same reaction was observed whatever the material used, but its degree varied greatly in different cases. Some times it was sharply localized, and sometimes it extended to a distance. In all cases in which it was very pronounced there was a certain mobility because the material was poorly apposed or because the osteosynthesis was mechanically insufficient. Robineau and Contremoulin have repeatedly emphasized that absolute immobility is essential for the biological success of osteosynthesis.

The authors' findings seemed to indicate that the less the volume of the foreign material used the less the rarefaction, although even when the Robineau Contremoulin metal collar was used there was excellent tolerance and the reaction was minimal if absolute immobility was obtained. As callus does not form in the immediate vicinity of the metal, it appears also that the less the volume of the material used the more easily will union occur. The authors therefore conclude that Cunéo's material, which presents a volume much smaller than that of any similar appliance, affords the best biological conditions for bone repair.

The article is illustrated with roentgenograms and photomicrographs. FLORENCE A. CARPENTER

**Pairet and Didie.** Three Cases of Recurrent Dislocation of the Shoulder Treated by the Procedures of Louis Bazy and Oudard. The Roentgenographic Technique for Demonstrating the Lesions of the Head of the Humerus (Trois cas de luxation récurrente de l'épaule traités par les procédés de Louis Bazy et de Oudard. Technique radiographique pour mettre en évidence les lésions de la tête humérale.) *Bull et mém Soc nat de chir* 1929, 14 1423

The roentgenological demonstration of deformities of the head of the humerus requires external rotation for measurement of the angles, internal rotation for examination of the humeral notch (hatchet appearance), and ventral decubitus with the hand on the hip and the elbow slightly elevated so that the epicondylar epitrochlear axis is approximately vertical.

In the cases of recurrent dislocation of the shoulder reported by the authors, traumatic bony lesions were absent or unimportant factors in the condition. Deformities of the head of the humerus, however, were found in every instance. Closure of the angle of inclination was evident in only one case, in which varus was indisputable in the position of external rotation. In one case a change in the angle of inclination was suspected. Lengthening of the neck was clearly evident in one case and less certain in the two others. The inferior tubercle was present and the humeral notch was seen in all. In the posi-

tion of external rotation the classical position for examination of the shoulder, the notch was hardly visible. In the first case it was a wide but shallow depression, in the second, it was narrower and deeper and in the third it appeared as a wide and extensive loss of substance.

The operative technique employed by the authors differed slightly from that of Bazy and slightly more from that of Oudard. In the first case difficulties were encountered in fastening the tibial graft to the base of the coracoid process because too much of the latter had been scraped away. Semierclage was therefore resorted to. In the second case the two coracoid fragments were covered with the osteo-periosteal graft and the fragments and graft then fixed by semierclage. In the third case, following the latest technique of Bazy, the authors introduced into the thickness of the coracobiceps, not a graft from the tibia, but a fragment of the coracoid process turned down as in osteoplastic procedures. Thus from operation to operation, the technique was simplified. The immediate results, at least, of the last operation were the best.

Bazy, who read this report for Pairet and Didie, called attention particularly to the anterior capsulo-periosteal detachment which was discovered in all three cases when the joint was opened.

FLORENCE A. CARPENTER

**Ehst, W.** Fracture of the First Metacarpal and Its Treatment (Ueber Brueche des 1. Mittelhandknochens und ihre Behandlung.) *Arch f orthop Chir*, 1929, XXVII 375

Fractures of the first metacarpal are considerably less common than fractures of the fifth metacarpal, but their diagnosis and treatment are of special importance. For practical purposes they may be classified into two groups—Bennett's fractures and fractures of other types. In the three years since the establishment of the Accident Hospital in Vienna forty cases have been treated in that institution. Thirty two were recent fractures. Among these there were fourteen Bennett fractures. Fractures of this type occur most frequently in the right hand. Recently, they have been found more often in women than in men.

Bennett's fracture involves the ulnolateral portion of the base of the first metacarpal and is usually associated with subluxation of the entire first metacarpal. The degree of subluxation varies up to complete luxation. The process broken off does not form a part of the joint surface. A sharp distinction between Bennett fractures and other fractures is rendered difficult by the fact that the injuries vary from simple luxation through the typical Bennett type to the para-articular fracture. The degree of involvement of the joint surface is of importance in the treatment.

Clinical examination reveals besides the swelling, which is often slight, a marked protrusion of the base of the first metacarpal radial to the tabatière, diminished power of apposition, and sometimes an

inflection of the axis of the bone toward the ulnar side. Frequently there is very little pain. The roentgenogram clinches the diagnosis.

Functional treatment is not favored. In recent cases the treatment has consisted of reposition accomplished by abduction and extension without local anesthesia. In cases of subluxation without fracture, Bennett's fracture with and without subluxation, in which only the extra-articular process is broken off, a plaster splint has been applied. In the other types of fracture with involvement of more than the ulnar third of the joint surface, wire extension has been applied. The technique of applying the plaster bandage directly on the skin and the subsequent *reposition which must be maintained* until the plaster hardens must be read in the original article. The plaster dressing is left in place for four weeks. Wire extension is made on the end phalanx of the thumb. The pull is obtained by means of a Kramer splint which is fastened to the thumb by a plaster-of-Paris dressing. Only the wrist and thumb joints are immobilized. All of the others are allowed

free movement. The wrist does not become stiff during immobilization for four weeks. The fracture heals well with this method. In the cases reviewed there were no pseudarthroses. Persons with fractures well healed by this treatment do not require compensation as, at most, there is a disability of only 5 or 6 per cent for three months. This is a marked improvement over the usual procedure. In Bennett's fracture with severe secondary arthritis for which compensation for disability up to 10 per cent is given for years.

In the cases reviewed there were only two fractures of other parts of the metacarpals. Of these nine were open fractures (two due to gunshot wounds) and ten were transverse fractures of the base of the majority of the cases the fracture was produced by indirect force. In the cases without gunshot wounds treatment consisted of immobilization in a plaster splint or plaster cast. In cases with gunshot wounds treatment consisted of reposition and wire extension of the phalanx of the thumb. Open fractures were converted into closed ones.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Emile Weil, P., and Lévy Franchet, A. The Syndrome of Arterial Obliteration of the Thrombo-Angitis Type in the Lower Extremities Observed for Nine Years (Syndrome d'obliteration artérielle des membres inférieurs à type de thrombo-angite observé pendant neuf ans) *Bull et mém Soc méd d hôp de Par*, 1929, xlv, 1409

A Jew, aged forty six years developed phlebitis of the left saphenous vein of unknown origin and recovered, but three months after his clinical cure a study of the circulation revealed a decrease in the arterial tension at the malleolus and a difference between the oscilometric indices determined at the right and left malleoli. The patient had had no symptoms such as pain or coldness to draw his attention to the circulatory system. Three years later arteritis of the left lower extremity was manifested by painful cramps and intermittent claudication. Two years later the right lower extremity became involved and the vascular obliteration ran a more rapid course in this leg than in the left leg. The following year violent pains developed in the left leg, necessitating the use of morphine for the first time. The arterial tension and the oscilometric index fell progressively at both malleoli and in both popliteal spaces until they approached zero. Since that time (July 1928) the patient has complained of coldness of the feet but gangrene has not appeared. In December 1929, nine years after the onset of his disease he was still able to keep at his occupation, but he avoided long walks and walking uphill.

This case has all of the characteristics of the obliterating thrombo-angitis described by Buerger—race, age, absence of known cause, normal blood cholesterol and blood sugar, prodromal phlebitis, disappearance of the pulse in the dorsalis pedis and posterior tibial arteries and slow evolution with exacerbations and remissions.

The authors emphasize the importance of careful oscilometry in the cases of all persons with a pathological condition in the lower extremities.

Attention is called to the fact that in the case reported the arterial tension and the oscilometric index were sometimes lower in the popliteal spaces than at the malleoli. This phenomenon may perhaps be explained by the vicarious functional rôle of the arterioles and capillaries. In some cases the authors have observed also complete disappearance of the oscillations in the dorsalis pedis without pain or gangrene. It appears as Vaquez, Maudaire, and Giroux have pointed out that the oscilometric index can remain at zero without complete interruption of the circulation.

Although treatment can have no effect on the organized lesion it is not without value in the spastic crises, during which alone, there is pain. These transient crises are brought on by exercise, especially walking uphill, by cold by compression of the vascular trunks due to prolonged sitting and, perhaps, by emotion and fatigue. Diathermy, hot air under pressure, geneserin and acecholin given by subcutaneous injection seem to have a favorable effect on the crises.

FLORENCE A. CARPENTER

McCarthy, P. A. The Treatment of Aneurisms of the Thoracic Aorta and Innominate Artery by Distal Arteriovenous Anastomosis. *Ann Surg*, 1930, lxi, 161

The author reviews the history of aneurism of the thoracic aorta from the time of Vesalius up to 1925, when Babcock treated the condition by anastomosing the internal jugular vein to the common carotid artery. He states that, with the exception of wiring all methods of treatment proposed in the past have been discarded as useless, and that wiring can be done with success in only a very limited number of cases.

The action of moving fluids is discussed on the basis of the following elementary hydrodynamic laws: 1. Moving fluids acquire resistance from the cohesion of molecules to each other and their adhesion to the sides of the conducting vessels. 2. Moving fluids have velocity which depends on the force driving them and varies inversely with the lumen of the conducting vessel. 3. All fluids, whether in motion or at rest, have a constant volume, and the resistance of fluids may be considered as the total volume of all fluid ahead of a certain point.

These laws when applied to the circulating blood, establish the following facts: 1. The intraventricular pressure and arterial pressure are positive. 2. The venous pressure is negative.

On the basis of these facts it is evident that when the common carotid artery is anastomosed to the internal jugular vein little or no strain will be exerted on the point of anastomosis. When the blood supply of one half of the head is cut off above a certain point, the head pressure, which includes the resistance caused by all vessels ahead of this point, is removed. Removal of this resistance removes some of the lateral or radial pressure on the artery from the point of the anastomosis back to the ventricle and thus will reduce the pressure in an aneurism in that area. In addition to the removal of the resistance, an aspirating effect is exerted on this point by the venous suction. Removal of the head pressure then affects the velocity of the blood flow, and as the velocity is affected so is the driving force, the heart.

The author reports in detail ten cases of aneurism of the thoracic aorta, in four of which there was also an aneurism of the innominate artery. Distal arteriovenous anastomosis was done in eight cases with an immediate mortality of 25 per cent. In the cases in which the operation was successful it gave immediate relief from the pain and the difficulty in breathing and swallowing. The author concludes that arteriovenous anastomosis is the operation of choice in aneurism of the thoracic aorta and in innominate artery.

LOUIS P. GANBEE, M.D.

### BLOOD, TRANSFUSION

Dienst, A. Further Investigations on the Nature, Effect, and Site of Origin of Antithrombin in the Organism and Its Clinical Significance from the Diagnostic, Prognostic, and Therapeutic Standpoints. Also a Clarification of the Objections of Witte of Hannover to the Diagnosis of Early Pregnancy on the Basis of Antithrombin Determinations According to the Author's Method and of the Objections of Salacz and Gyulai of Budapest and Wislanski of Lemberg (Weitere Untersuchungen ueber das Wesen, Wirken und den Ursprungsort des Antithrombins im Organismus und seine klinische Bedeutung in diagnostischer, prognostischer und therapeutischer Hinsicht. Zugleich eine Klarstellung der Einwände von Witte, Hannover, gegen das Antithrombin als Erkennungsmittel der Fruchschwangerschaft nach meiner Methode, ferner von Salacz und Gyulai, Budapest, und Wislanski, Lemberg.) *Arch f Gynaek*, 1929, cxxviii, 751.

Dienst refutes the objections which Witte has raised against the diagnosis of pregnancy on the basis of the metathrombin content of the blood. The antithrombin apparently has the function of fixing the dangerous thrombokinase. It is a source of danger only when it occurs in the circulating blood in pathologically increased amounts. When thrombin is present in physiological amount its action consists only in the formation of the fibrin by fixation with the fibrinogen, whereby it produces blood thrombi and protects the body against death from hemorrhage in injuries of the blood vessels, but when it is present in an atypically increased amount as in certain pathological conditions it has an extremely toxic effect on the organism as a whole.

In eclampsia and the toxosies of pregnancy the author found first an increase of fibrinogen and then a decrease down to complete absence. When the threshold value of the toxins of pregnancy is reached, an edema of the brain develops as a result of the atypically increased thrombin and produces the eclamptic convulsions by exerting pressure on the motor areas of the cerebral cortex. Antithrombin is produced not only by the liver, but also by the uterine mucosa, the placenta, the follicular fluid, the theca cells, the corpus luteum of pregnancy, the thyroid gland, the adrenals, the breasts, the pancreas, the testes, the sperm, and the hypophysis. Following impregnation, the antithrombin predominates in the mucous membrane of the uterus,

while in the non pregnant state the thrombin predominates.

Determination of the antithrombin is not a specific test for pregnancy. As the greatest destruction of leucocytes during labor is demonstrable during the labor pains, and as the excessively formed thrombokinase may be effective at the moment of its development whereas the amounts of fibrinogen developing simultaneously therefrom do not reach the blood and become effective there until later, it appears that possibly, when only the eclamptic threshold value of the thrombin is reached, a previously normal appearing woman in labor may be suddenly attacked by puerperal eclampsia without a distinct increase of fibrinogen and without albuminuria. The further course of the puerperium then depends upon whether the heart can provide a sufficient perfusion to even the antithrombin producing organs. The final outcome of the condition depends far more upon the amount of fibrinogen than upon the amount of thrombin. Large doses of sodium bicarbonate such as are given for acidosis have a favorable effect on the toxosies of pregnancy.

O. O. FELLNER (G)

Iundberg, A. Lecithin as a Substance Capable of Inhibiting Haemo-Agglutination (De la lecitine, en tant que substance capable d'inhiber l'hémoagglutination) *Acta med Scand*, 1929, lxxxi, 395.

In a series of experiments *in vitro*, Groeberg and the author showed that lecithin acted to increase the resistance of the red blood cells to a hypotonic solution of sea salt and to hæmolytic substances such as saponin and extract of *botriocephalus latus*. In complementary experiments it was shown that the only kind of lecithin that had this effect was ovo lecithin reduced to a fine emulsion.

In the author's latest experiments, the blood group of a sample of citrated blood was first determined in the usual way. If agglutination occurred, the blood was mixed with the lecithin emulsion and the group was again determined. If the blood belonged to Group A, B, or AB (Dungern and Hirsfeld), 2 drops of the lecithin emulsion were added so that the composition of the blood and lecithin was as follows: 1 c.c. of 3.8 per cent sodium citrate plus 1 drop of blood plus 2 drops of a 0.25 per cent emulsion of lecithin (70 drops to 1 c.c.). At the end of five minutes the blood group was determined again with the blood thus treated.

In all cases in which the blood belonged to Group A or B, agglutination was then absent, the blood reacted as though it belonged to Group O. Blood belonging to Group AB did not react constantly in the same manner. In one case it reacted as though it belonged to Group A, in four cases, it reacted as though it belonged to Group O, and in one case, no effect was observed (the patient from whom this sample of blood had been taken was in hospital for thrombosis). A lecithin concentration less than 1:15,000 had no effect on hæmo agglutination. A

latent period of at least five minutes was observed. Altogether, eighty one samples of Group A blood, seventy eight samples of Group B blood and six samples of Group AB blood were tested.

The author has made three clinical experiments using "helpint," which contains lecithin and is obtainable sterilized in sealed capsules. Five cubic centimeters were injected intravenously. The patients belonged to Groups A and B. In each of these bloods agglutination was manifest to the naked eye at the end of half a minute. When a second test was made with the same serum twenty four hours after the injection in the case of the Group B blood and sixteen hours after the injection in the case of Group A blood about one and one half minutes elapsed before agglutination took place.

FLORENCE A. CARPENTER

**Bogomolec A.** The Scientific and Practical Importance of Blood Transfusion (Zur Frage der wissenschaftlichen und praktischen Bedeutung der Bluttransfusion) *Trav. Delo* 1929, xii, 415

The author reviews the work of the experimental division of the Institute for Blood Transfusion in Moscow.

The fact that the erythrocytes persist for a long time in the organism of the recipient leads to the assumption that the other constituents of the blood persist for an equally long time. This however is not true. The severe reactions which frequently appear several days after transfusion suggest that as in foreign protein therapy there is partial destruction of the plasma protein with colloidoclasia. The investigations of Medvedjeva showed that more protein is destroyed in the blood of the recipient than is introduced with the donor's blood. Therefore the absence of isohæmic agglutination is not an absolute guarantee of a reactionless transfusion. If the bloods of the donor and recipient are entirely compatible there is a permanent increase in the plasma protein without an increase in the residual nitrogen.

The use of transfusion to substitute for hormonal insufficiency was also studied. It was found that following removal of the pancreas transfusion was wholly without effect. In parathyroid tetany a better result was obtained from the transfusion of blood and calcium chloride than from the transfusion of either of these agents alone (Judasz).

Since the organism possesses an enormous regenerative capacity after severe hæmorrhage the favorable effect of blood transfusion in profuse bleeding is explained chiefly by its stimulation of vascular tone and its relief of shock.

In anemia following intoxication with benzol phenylhydrazin or lead the beneficial effects of blood transfusion are striking. Lead cohes disappear after the transfusion but the effect does not persist long.

With the assumption that cancer cannot arise in an organism in which the connective tissue apparatus is healthy, the author studied the effect of

blood transfusion on the dysoxidative carbonuria associated with cancer. He found that the carbon nitrogen ratio in the urine of the patient with carcinoma may become normal again under the influence of blood transfusion, therefore, the transfusion affects the factor which is of the greatest importance in the production of cachexia. However, this effect is only temporary.

These results and the fact that the blood transfusion stimulates the physiological connective tissue system suggest to Bogomolec that it may be possible to employ blood transfusion to prevent cancer and combat metastasis and recurrence.

LEOPOLD HOLST (Z)

**Belentsh D.** Experimental Studies of Blood Transfusion (Experimentelle Beiträge zur Lehre von der Bluttransfusion) *Nov. Chir. Arch.* 1929, xvi, 189, 327, 489

This report is based on 279 experiments carried out on 419 dogs. The chief object of the investigation was to determine the value of sodium citrate. The blood was always taken from the femoral artery and injected into the femoral vein. The blood pressure and respirations were recorded by means of a kymograph. The same dog was never used as a donor more than once. All of the experiments dealt with acute hæmorrhage.

The results showed that citrated blood has the same restorative effect as whole blood. It was found to be a complete substitute, fulfilling all of the functions of whole blood in gaseous metabolism.

Attention is called to the fact that while blood transfusion is a specific therapeutic procedure in severe acute hæmorrhage, it is effective only within certain definite physiological limits of acute blood loss. If these limits are passed, no transfusion, of either whole or citrated blood can maintain life even if complete cardiac failure has not resulted. A transfusion will stimulate cardiac action somewhat, but the blood pressure very quickly falls and death results.

Blood plasma serum and a mixture of one part of blood to three parts of physiological salt solution can also bring about substantial improvement after acute hæmorrhage but artificial solutions such as physiological saline solution alone and Lehmann's solution only exceptionally have a lasting effect.

Citrated blood is always somewhat toxic as it contains an excess of sodium citrate. Its toxicity is determined by the amount of the excess. However the therapeutic margin of safety of sodium citrate is relatively large. In cases of citrate poisoning, calcium is the only certain remedy. It is promptly effective even in acute cases.

The experiments showed also that blood transfusion is by no means a transplantation of blood as the formed elements of the transfused blood are always rapidly destroyed in the body of the recipient. This destruction occurs after the transfusion of whole blood as well as citrated blood. However a stimulating effect on the hæmatopoietic system must be taken into account.

The author concludes that blood transfusion is the most effective treatment of acute hæmorrhage, and that there is no reason for abandoning the use of citrated blood. The problem of citrated blood is the problem of the toxicity of the sodium citrate. The tolerance of human beings to this substance is rather great. The amount of citrated blood that is usually transfused—not more than 3 per cent of the body weight—is associated with no danger of poisoning.

ALIPOV (Z)

#### RETICULO-ENDOTHELIAL SYSTEM

Scheyer, H. E. Streptococcus Sepsis and the Reticulo-Endothelial System. *Monatsschr f Geburtsh u Gynaek*, 1929, LXXIII, 335

The reaction of the reticulo endothelial system of mice to streptococcus infection is described.

Within a few minutes after infection there was a darkening of the nuclei of the phagocytic cells. Soon enlargement of the cells and increased phagocytosis of bacteria, erythrocytes, cell fragments, pigments, etc., were noted, this is the stage of hypertrophy. In the third stage, hyperplastic changes in the phagocytic cells took place. If the phagocytic cells were not victors over the infection, necroses occurred, particularly in the liver and spleen. Experimental animals which succumbed quickly to the infection showed scarcely any changes in the reticulo-endothelial system. Surviving animals showed all stages of phagocytic cell proliferation, an indication of increased functional activity. In animals which succumbed to the infection after a longer time, necroses were found in the parenchymatous organs in addition to proliferative processes of all types.

Similar differences in reaction to infection in sepsis have been noted in man. Three types of cases are distinguished. In those of one type there is a good reaction with recovery. In those of another, there is a good reaction at first, but death ultimately results from exhaustion. In those of the third type there is no reaction and the infection causes death quickly.

These differences which were observed previously in sepsis from various causes were noted by Scheyer in human puerperal sepsis. Scheyer studied twenty cases of streptococcus sepsis following abortion and delivery, seven cases of puerperal staphylococcus sepsis, and several non puerperal cases of sepsis originating in the genital organs. These cases were divided into three groups as follows. Group 1, consisting of five cases of streptococcus peritonitis, three cases of non puerperal, but genital, streptococcus peritonitis, and one case of staphylococcus peritonitis, with a maximal duration of life of from four to five days, Group 2, consisting of four cases of fulminating streptococcus sepsis in which death resulted within a few days without peritonitis and without thrombophlebitis, and Group 3, consisting of eleven cases of streptococcus sepsis and five cases of staphylococcus sepsis with thrombophlebitis, with a duration of life of from one to five weeks. The cases in Groups 1 and 2 were representative of the type in which no reaction occurs, whereas those in Group 3 were examples of the type in which death results after a primarily good reaction.

The case with a good reaction is one in which puerperal fever does not develop in spite of definite opportunities for infection, or in which, in spite of puerperal fever and repeatedly positive blood cultures, the infection is overcome. H. HEIDLER (G)



# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

**Nikisin F.** The Individuality and Resistance of Surgical Patients (Individualität und Widerstandsfähigkeit der chirurgisch Kranken) *Acta chirurg. Scand.* 1930 lvi, 63

Progovoff, the founder of Russian surgery, encouraged the study of the individuality of surgical diseases and foresaw the development of a school through which the scope of this question would be widened. The work carried out at Martynoff's clinic at Moscow and by Rehn at Freiburg and the studies of American and English surgeons prove that Progovoff's anticipations have come true.

In Czechoslovakia Kukula's clinic now that of Jirásek paid particular attention to the problem.

The author bases his theory on the assumption of Bernard, Pfäuger and Lepeschkin that life differs from death in its capability for synthesis and assimilation. In order to explain the synthetic properties of the protoplasm of his patients he determined the oxyhemoglobin of the arterial and venous blood, the oxidation coefficient in the tissues, the hydrogen ion concentration of the blood (Cullen), and the alkali reserve. He determined also the vital capacity of the lungs, the urinary reaction (pH), and the ammonia coefficient of the urine.

In this way forty-two patients were investigated, most of whom had some abdominal disease. Of these thirty-eight were operated upon and eleven died soon after the operation.

The author classifies those who died into two groups. In the first group he places six men who died of peritonitis or hemorrhage and in the second group three who died of bronchopneumonia and two who died of cachexia. He states that those of the second group presented the phenomenon characteristic of patients who die from slight operative trauma and after a short anaesthesia, viz. an insufficient supply of oxygen to the organism (82 per cent) or poor utilization of the oxygen in the tissues (0.09 to 0.12 instead of 0.13 to 0.17 per cent), that is to say, a weakness of the synthetic properties of the protoplasm.

**Jirásek, A.** The Preparation of Patients for Operation (Die Vorbereitung des Kranken zur Operation) *Acta chirurg. Scand.* 1930 lvi, 23

This article deals with two questions which every surgeon must ask himself before proceeding to operate. What kind of an individual is this patient constitutionally and in a physicochemical sense and how is he going to stand the proposed operation? The answer requires careful observation of the syndromes in fatal cases and a study of the causes of death following operation. To show the necessity

for a clear recognition of the pathological type previous to operation the author reviews the dangers associated with different operations in the cases of certain constitutions. He discusses in particular the influence of decreased and increased coagulability of the blood. Following a review of the possibilities and shortcomings of functional diagnosis, he points out the causes of postoperative non-infectious ileus and discusses whether it is possible to guard against such an idiopathic ileus.

He attaches great importance to the determination of the patient's physicochemical type before operation and shows the possibilities in this diagnosis. He then speaks of the general preparation of the patient particularly along the chemical and bacteriological lines (administration of glucose prophylactic vaccination). Finally, he describes the special preparation for various operations such as those for pseudarthrosis.

**Boshamer K.** Investigations on the Origin and Prophylaxis of Thromboses (Untersuchungen ueber die Thrombosenentstehung und prophylaxe) *Deutsche Zeitschr. f. Chir.* 19 9 cxxvi, 93

According to modern views, thrombosis is the result of retardation of the blood stream of a central and peripheral nature, injury of blood vessel walls, and blood changes. However, even though we know to a certain extent the formal genesis of thromboses we have no knowledge of the causal genesis. The questions as to how the extraordinary rise of the residual nitrogen values in the blood occurs, what causes the delay of the peptidase excretion, and why one organism reacts to a serious operation with only slight deviations in the albumin content of the blood and another reacts to a slight operation with extraordinarily large deviations of the plasma colloid still remain unanswered.

von Seemen and Binswanger believe that constitutional factors must be considered. According to the author's investigations, there are two types of constitution: the Rehn type, characterized chiefly by a labile nervous system, and the type characterized by pronounced parasymphaticotonic hypertonia. The Freund theory, according to which the predisposition of the organism to thrombus formation is due to a weakness of the thyroid gland, is rejected by the author on the basis of observations of the iodine content of the blood and basal metabolic studies of twenty-three patients with thrombosis. A pronounced hypothyroidism in these cases is an exception. The author believes that thrombosis is due to shock in the sense of Rehn, Coenen, and Schoen, the result of operative trauma and the chemical irritation of the postoperative cell destruction, in which the chief symptom is paralysis of all or a part of the

vascular system." As a rule this operative shock is rapidly overcome. The manner of reaction of the autonomic nervous system is of decisive significance since, according to Rehn, the tendency toward the development of shock may be of constitutional origin or acquired, but in the last analysis is based upon a lability of the vasomotor nerves.

The author studied the effect of operative intervention on the autonomic nervous system as indicated by Widal's haemoclastic crisis, a reaction which is "the result of a vasomotor stimulation in the splanchnic region or a vagus stimulation produced chiefly in a reflex manner, but partly also by a direct effect of albuminous substances reaching the liver and blood vessels by resorption." Whereas, normally, a contraction of the abdominal vessels follows vasomotor stimulation, in paralysis of the vasomotor centers from external influences or those of a constitutional nature a dilatation of the splanchnic vessels results. To this is added a contraction of the liver veins which further increases the dilatation of the abdominal vessels. In nearly all cases of abdominal operation the Widal test is positive, usually within the first few days or, after a short convalescence, on the third to the fifth day. As a rule the reaction is again normal after five or six days, but in cases of thrombosis it remains positive for a long time (for from ten to fourteen days). In some of the cases studied, this Widal reaction persisted "as the sign of a constitutional parasympathotonic hypertension and a tendency toward shock."

Included in the author's investigations were tests of the circulation of thrombotic patients carried out according to the methods of Kauffmann and Usadel and estimations of the respiratory quotients. According to the results of these studies, the majority of persons with thrombosis may be designated as "persons with an abnormally marked reaction to operative intervention and postoperative lesions," and as "persons with a special lability of the vasomotor nerves and of the autonomic nervous system, or with parasympathotonic hypertension."

Urinalyses revealed increased indicanuria at the time of the development of the thromboses.

The ratio of thrombosis after abdominal operations to thrombosis after operations on the thorax or extremities is 4.2:1. Two subgroups of thrombotic patients are to be distinguished: those with disturbed renal function, and those who have had a bone injury or bone operation.

The author maintains that a probable diagnosis of thrombosis can often be made from the blood changes, but reports a case with very slight blood changes which shows that this is not true in every instance.

As prophylaxis, Boshamer recommends the intra-venous or peroral administration of 1,500 c.c.m. of Ringer's solution on the day before the operation, combined with atropin and thyroxin. Just before the operation, he gives 1 mgm. of thyroxin subcutaneously. As postoperative treatment he recommends the administration of atropin and thyroxin

interrupted by the oral administration of 1,000 c.c.m. of Ringer's solution on the third and eighth days after the operation.

Experiments on dogs which were carried out to prove the author's views did not give the desired result as it was impossible to produce a pronounced parasympathotonic hypertonia and circulatory weakness in these animals. WANKE (Z)

Mayer, A. Thrombosis and Embolism (Ueber Thrombose und Embolie). *Zentralbl. f. Gynaek.*, 1929, p. 2770.

Thrombosis is very common at Mayer's clinic in Tuebingen. Before the War, the incidence of puerperal thrombosis in Tuebingen (1.9 per cent) was exceeded only by that at Berlin (2.5 per cent) and that at Basel (2 per cent). The cause may lie in the unusual frequency and severity of varicosities, states of exhaustion, frequent pregnancies, and the hard physical labor to which the Swabian women are subject (conditional factors). The assumption of constitutional factors possibly resulting from extensive inbreeding and the inheritance of a predisposition toward the development of varicosities is entirely hypothetical. Since the World War the frequency of thrombosis has been 2 per cent. The increase has therefore not been noteworthy, but embolism has become considerably more common. Before the War, emboli were formed in 0.17 per cent of the cases of thrombosis in obstetrical practice, whereas today they occur in 0.5 per cent. Accordingly, there has been a threefold increase. The incidence of puerperal thrombosis was higher than that of postoperative thrombosis (2.08 per cent), but the incidence of puerperal embolism (0.52 per cent) was lower than that of postoperative embolism (0.9 per cent).

With lengthy, ingenious explanations which reveal an extensive knowledge of the findings of investigations in other fields of practice, the author discusses the reasons for these phenomena. His observations are well worth reading but can be mentioned here only briefly. After eliminating a number of possible causes, Mayer calls attention to the facts that the maximal incidence of thrombosis and embolism occurs between the thirtieth and fortieth years of age whereas the maximal incidence of pregnancy is generally reached between the ages of twenty and thirty years, and the incidence of embolism and thrombosis is higher in multiparae (2.8 per cent) than in primiparae. He states that the habitus, lues, and constitutional degeneration do not deserve consideration. Of greater importance is injury to the heart persisting from the years of starvation and bodily and psychic disturbances. Another factor is the change in the behavior of the endocrine glands caused by the hunger blockade which is manifested by late menstruation and hypofunction of the genital glands associated with a series of other changes that may be designated briefly as "endocrine inferiority" of the blood and vascular system originating from the World War

The author calls attention especially to the vascular endothelium which, as a result of increased resorptive power (Dietrich) caused by alien protein like substances, favors thrombosis formation. This increased power of resorption is in part dependent upon the diet and leads to sensitization of the vascular endothelium.

Of practical importance is the author's discussion of the Trendelenburg treatment of pulmonary embolism and the question as to whether gynecologists should perform this operation. The mortality of puerperal embolism is about 32 per cent, the mortality of postoperative embolism, about 70 per cent, and the total mortality in cases not operated upon, about 70 per cent. The operative danger decreases with the surgeon's increasing experience. However, in 25 per cent of all embolisms and in 50 per cent of those which are fatal from the beginning, death occurs immediately or after a few minutes. All observations prove that it is extraordinarily difficult to establish the indication.

Most important now as before, is prophylaxis. In the pre operative treatment digitalization plays an important part. Recently Walters of the Mayo Clinic, has tried out prophylactic thyrotoxin treatment. The surgicotechnical prophylaxis (accurate hæmostasis, careful asepsis and careful handling of the tissues) is well known. In the after treatment great importance is attached to gymnastic exercises following operation or during the puerperium. Mayer cites the figures of Walthard which show only 6 fatal embolisms among 32,632 puerperal women who were given gymnastic exercises. However in the author's cases treated by gymnastic exercises embolism has been more frequent than in those in which gymnastic exercises were not used. Mayer believes that his patients have a constitutional predisposition toward thrombosis which is dependent upon their type occupation, family and race.

II FLENN (G)

### ANÆSTHESIA

Ipsen J. The Arteries and Anæsthesia (les artères et l'anesthésie). *Acta chirurg Scand* 1929, lxxv, 487.

If during general anesthesia the superficial temperature is taken on the foot under felt with a mercury thermometer it will be found that under normal conditions the temperature rises at the beginning of the anæsthetization. The rise may be explained as being due to the elimination of a physiological spasm of the arteries of the foot. It ceases only when the patient has become completely anæsthetized.

In the cases reviewed by the author the temperature at the beginning of the rise averaged about 30 degrees C., but varied between 24 and 34 degrees. When it ceased to rise, it had usually reached, from 34 to 36 degrees C. Ipsen was unable to note a corresponding rise of the superficial temperature in other parts of the body except in the lowermost part of the leg. In children under ten years of age the initial

temperature was on the average higher, and in persons beyond fifty years of age it was lower than in young adults. In the older persons it rose only up to between 32 and 33 degrees. Having once risen, it remained fairly constant in most cases, even during prolonged operations.

Of 400 operations, considerable deviations (18 per cent) were noted in 72. Some of these deviations could be explained by local influences. Thus for instance, the temperature did not rise when an Eschmarch bandage had been applied to the leg and it did not rise on the affected side in cases of embolism. In cases with a local process in one foot the initial temperature was sometimes considerably higher in the involved foot than in the normal foot, but ultimately the temperatures of both feet were about the same. In cases of damage to the sciatic nerve (war lesions), the temperature rose only on the normal side. It was noted also that whenever the sympathetic ganglia were affected during the operation as in severe kidney operations, the temperature fell on the same side. In affections of the central nervous system, such as meningitis and syringomyelia other irregularities in the temperature curve were noted.

In addition to these cases there were 35 others in which the curve of the foot temperature was abnormal, showing no rise or only a slight rise or else a fall in both feet after the normal rise. Nine were those of patients over fifty five years of age, most of whom showed only a slight rise or none at all. Of 9 younger patients who showed no rise, the majority were in poor condition, suffering from peritonitis or some other severe complication. In 1 case with no rise in the temperature, collapse with arrest of the respiration and pulse occurred at the end of a simple appendectomy. This was the only case of after collapse that the author has observed. A secondary fall in the temperature of 2 or more degrees occurred in 17 cases.

It was found that of the patients with normal temperature curves, 7.4 per cent died, whereas of the patients with an abnormal temperature curve 4.9 per cent died.

The author discusses in some detail his theory that the abnormal course of the temperature curve was due to a shock like condition in which large as well as small arteries contracted. In agreement with this theory was the fact that the temperature in the foot ceased to fall and sometimes even rose following the intravenous injection of gum Arabic in saline solution to relieve shock.

Dassen R. Mental Confusion, Severe Headache, and Parinaud's Syndrome After Spinal Anæsthesia (Confusion mental, céphalée grave y síndrome de Parinaud después de una raqui-anestesia). *Seminars med* 1930, xxxvii, 153.

A man thirty six years of age was operated on under spinal anesthesia for inguinal hernia. The postoperative course was normal. When the patient left the hospital eleven days after the operation he

had a slight headache. The headache increased to such an extent that he was re-admitted to the hospital twenty five days later. He then showed a psychosis of the type of mental confusion with intervals of oniric delirium, but neurological examination was negative and there were no signs of meningitis. The headache was of the classical type that sometimes follows spinal anesthesia or lumbar puncture. The patient had an azotemia of 0.57 per thousand, but this could hardly have caused a headache so severe. Although a history of chancre was given, the Wassermann test was negative and specific treatment was without any very definite effect. Moreover, the patient began to show improvement in two weeks and finally recovered entirely with no changes in the nervous system, another indication that syphilis was not the cause.

From this case and similar cases cited from the literature, the author concludes that spinal anesthesia should not be used when it is possible to employ general anesthesia. AUDREY G. MORGAN, M.D.

Hendersen, V. E., and Lucas, G. H. W. Cyclopropane. A New Anesthetic. *Ans & Anal*, 1930, 17, 1.

Cyclopropane, an isomer of propylene, is prepared from trimethylene bromide.

The authors report experiments in which cyclopropane was used as an anesthetic for cats and dogs. The amount of the gas required ranged from 10 to 15 per cent. The remainder of the mixture consisted of varying amounts of oxygen and air. Toxic features were noted when concentrations of from 18 to 20 per cent were used and were manifested principally by a fall in the blood pressure and slow,

shallow respirations. Anesthesia became established in four or five minutes. Following removal of the gas, consciousness usually returned in five minutes.

VERNE G. BURDEN, M.D.

### SURGICAL INSTRUMENTS AND APPARATUS

Meleney, F. L. How Can We Insure the Sterility of Catgut? *Surg, Gynec & Obst*, 1930, 1, 271.

It has been proved that in certain instances catgut was the source of postoperative tetanus and gangrene. This report is based on a study made in cooperation with the American College of Surgeons to determine a standardized process for the preparation of catgut which would insure its sterility.

Of eighty-three specimens of raw surgical catgut examined to determine the presence of pathogenic anaerobes, the organisms were found in thirty-eight. In the thirty-eight positive specimens there were forty-two strains of pathogenic spore-forming anaerobes including all of the three common species of gas-gangrene organisms.

Meleney concludes with the statement that in the consideration of any sterilizing process to be applied to catgut it must be assumed that any or all of the well-known gas-gangrene spore-forming anaerobes are present in the material. Tests to determine the sterility of the final product after it has passed through the sterilizing process must be able to bring to life any organism which may be present. The media and the method must be favorable to cultivate the anaerobes which require the strictest anaerobic environment, and a sufficiently long incubation time must be allowed for the organisms to make themselves manifest. VERNE G. BURDEN, M.D.

# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Schoenig A The Reticulo Endothelial System under the Influence of the Roentgen Ray and Its Relations to Roentgen Intoxication (Ueber das reticuloendotheliale System unter Roentgenwirkung und seine Beziehungen zum Roentgenkater) *Strahlen herapie*, 1929, xxiii, 55

The effect of therapeutic roentgen irradiation on the reticulo endothelial system was studied with the aid of the Congo red method. Immediately after irradiation with castration and carcinoma do es a reduction in the function of the reticulo endothelial system was noted. A close parallelism between the level of the Congo red index and roentgen intoxication was demonstrated. When the absorptive power of the reticulo endothelial system for the dye was poor, a marked intoxication developed and when the absorptive power was good intoxication did not occur. The absorptive power of the reticulo endothelial system for the Congo red seemed to correspond to its power of absorbing tissue toxins.

Roentgen intoxication is considered a sign of intoxication of the body by the products of cell destruction. Its severity depends upon the amount of such products which is formed under the influence of the roentgen rays and the power of the reticulo endothelial system to absorb them. As roentgen intoxication is the expression of a basic change especially of the protective apparatus of the organism an attempt should be made to prevent it by administering the therapeutic dose in several sittings.

## II HERDIER (G)

Ewing J Factors Determining Radioresistance in Tumors *Radiology* 1930 xiv 186

The factors determining radioresistance in tumors are numerous. In neoplasms in which radioresistance is due to the adult character of the stroma, the best results are obtained with repeated full doses given with the object of restraining growth. As an illustration the author cites a case of osteogenic sarcoma of the femur in a girl eighteen years of age. In this case, thirteen X ray treatments of high voltage which were given over a period of two years resulted in devitalization of the cellular portion of the tumor without a reduction in its size. The fact that no metastases occurred in two and one half years is attributed to the effects of the irradiation. Chondroma, chondrosarcoma and neurofibromata may also be restrained in their growth and prevented from forming metastases by irradiation. In a chondroma in a boy four years of age cessation of growth and calcification resulted from persistent irradiation. Keloids are fibrous adult tumors that form an exception to the rule of resistance: they respond slowly to full dosage.

The adult character of epithelial cells and the substantial blood supply render adenomata and papillomata radioresistant. Adenomata of the breast and thyroid and epitheliomata of the skin mucous membranes and larynx do not respond to full dosage. Epitheliomata of the bladder usually require interstitial irradiation of the pedicle for their destruction. It is thought that in the case of these tumors the cutting off of the blood supply plays an important part in the effect of the treatment as it does in myomata of the uterus which are types of adult tumors forming an exception as regards radioresistance.

Carcinomata are resistant in inverse proportion to the degree of anaplasia. The differences in the degree of anaplasia of carcinomata are so great as to warrant attempts at grading these tumors according to radiosensitivity.

In mixed tumors one element may be sensitive and another resistant and sterilization of the malignant portion without an appreciable change in size of the tumor may lead to the false impression of radioresistance. Mixed tumors of the testis may remain unaltered in size following irradiation though deprived of their capacity for growth.

Very vascular giant cell tumors present a special type of spurious resistance.

The nature of the tumor bed influences resistance. Fatty tissue increases resistance to irradiation this being one of the reasons why mammary cancer is often relatively radioresistant.

Infected tumors which are the site of exudative inflammation do not react well to irradiation. The poor results obtained when regression is sought indicate the influence of the environment of the tumor. Acquired resistance is undoubtedly built up. Tumor cells seem capable of adapting themselves to the effects of rays and later becoming very active. However, Ewing believes that in over irradiated tissues there is a loss of growth restraint.

The natural history of tumors is a guide to irradiation therapy. It is thought by many that all tumors possess unlimited powers of growth and unless they are dealt with summarily they will continue to grow indefinitely. This assumption is not justified. Chondromata often cease to grow after the bones have reached their full development. Fibrosarcomata may continue a very slow growth over many years without forming metastases. Salivary gland tumors have a limited growth capacity. Restraint of the growth of benign tumors seems to be a large field for irradiation therapy.

In mixed tumors of the salivary glands which may fail to show an immediate response to irradiation a 20 to 30 per cent reduction in growth capacity may be produced by irradiation after a year, the neoplasm being reduced to a harmless, quiescent mass and the

function of the facial nerve preserved. In a case of recurrent spindle cell periosteal sarcoma treated heavily by irradiation for four months without apparent effect, regression began after six months and the tumor finally disappeared never to recur. In the case of a child one year old a lymphangoma of the tongue presenting a protruding ulcerating mass gradually stopped growing after persistent irradiation and at the age of six the child was normal and had good function of the tongue. Juvenile myosarcoma of the nares or pharynx not infrequently yields to persistent small doses of irradiation. The mechanism by which irradiation affects the growth of resistant tumors should be further investigated.

A. JAMES LARKIN, M.D.

Sante, L. R. A Rational Method of Procedure in the Irradiation of Malignant Tumors. *Am J Roentgenol*, 1930, VIII, 57.

The effect of irradiation is dependent upon its selective action on certain radiosensitive cells, interference with cell nutrition through its effect on the blood supply of the tumor, and possibly its influence on general resistance to tumor growth. Reactions to irradiation are classified as autolytic, necrotic, and growth restraining.

The author recognizes the advantages of grading tumors histologically, but states that it is his rule to forego biopsy if securing the specimen entails breaking through the zone of normal tissue surrounding the tumor.

Sante's dictum is, "Never consider any malignant growth, no matter how small it may be or how slight the involvement may seem, to be insignificant, and conversely, never consider any malignant

growth, no matter how large or extensive it may seem, to be hopeless until it has been given the test of irradiation." If complete regression occurs within three or four weeks following a single intensive course within the tolerance dose of irradiation, the tumor is of the very sensitive type.

If the tumor shows partial regression, the cells are at least somewhat more sensitive than normal body tissues. More vigorous treatment by the Pfahler saturation method or by interstitial irradiation should be given.

When no regression results, it is doubtful if any amount of irradiation short of that capable of causing necrosis of normal tissues will destroy the tumor. Only growth restraint can be hoped for.

C. D. HAAGENSEN, M.D.

Zondek. Late Injury After Roentgen Irradiation (Spätschädigung nach Roentgenbestrahlung). *Ztschr f Geburtsh u Gynäk*, 1929, CVII, 167.

The author reports the case of a woman fifty one years of age who, following a series of thirty four roentgen irradiations administered twenty years previously for pruritus vulvæ, developed a carcinomatous ulcer of the skin as large as a 5 mark coin on the inner aspect of the left thigh a hand's breadth below the groin. Excision of the carcinoma in healthy tissue was followed by good cicatrization, but two years later the patient developed a second carcinoma which extended from the frenulum of the labia almost to the anal opening. The second carcinoma will be treated with radium. The author is convinced that the carcinomata were due to the skin injury produced by the roentgen irradiation.

WEHERFRTZ (G)

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Newburgh L. H., and Johnston, M. W. Endogenous Obesity—A Misconception *Ann Int Med*, 1930, 11, 815

It is well known that certain obese persons fail to lose weight during a period of observation in which they are restricted to a low calorie diet. This phenomenon has been attributed to abnormality of endocrine glands especially the hypophysis thyroid and gonads. Those who support the endocrine gland hypothesis assume a precarious position as they deny the principle of the conservation of energy and disregard the quantitative facts that form the foundation of our knowledge of energy transformation by man.

The authors cite the case of an obese young woman who required 2,300 calories to maintain her weight. An abrupt decrease in the energy value of the diet to 1,500 calories was followed by a rapid loss of weight lasting two days but during the next eleven days no weight was lost in spite of the undoubted caloric deficiency of the food. Another patient gained 3 lb. in nineteen days on a diet far below her maintenance requirement.

The possibility that these patients might have received extra food was ruled out by the fact that they were under constant supervision in especially constructed rooms and that laboratory analyses of the diets were made to make certain that they received only the energy allowances prescribed.

In order to predict the change in weight that will occur on a diet of a known caloric value it is necessary to measure the outflow of energy during the period of observation. The authors used a modification of the method of Benedict and Koot. Benedict and Root have shown that under certain conditions which are easily established the weight of the insensible perspiration is parallel with the metabolic rate in the basal state. If the gain or loss of weight for each twenty four hours is corrected for the weight of the food and drink on the one hand and for the weight of the urine and feces on the other the result is the weight of the insensible perspiration for the period. By reference to the proper table, this value may be directly converted into the total loss of heat for the twenty four hours.

In studies made on a normal young man in bed the authors found that when a diet with a known deficit of 600 calories was given the subject gained 1 lb. in five days. This response of the normal man made it clear that the ability to maintain the original weight when the diet yields less energy than is used is not characteristic of any particular type of obesity but is dependent upon the composition of the diet.

An obese young woman with a maintenance diet of 2,500 calories was put on a high carbohydrate (260 gm.) diet yielding 1,800 calories. For ten days a slow steady loss of weight occurred. When the carbohydrate was suddenly reduced to 42 gm. daily, the weight declined rapidly for a short time but then remained constant for nine days. Accordingly, this subject was first made to lose weight progressively and then to maintain her weight by the successive use of two diets which were about equal in energy value, but widely different in their carbohydrate content.

The literature does not reveal the length of time that weight may be maintained on a diet deficient in calories but the authors' observations show it to be a matter of days, the longest period being sixteen days. In the case of an obese young woman who was given a diet containing about one half her caloric requirement essentially no weight loss was noted for ten days. Then abruptly a continuous rapid loss occurred until the thirteenth day, when the predicted weight was reached. The ultimate weight was predicted by converting the caloric deficit for thirteen days into the weight of the adipose tissue that would be oxidized by the subject if her metabolism conducted itself in accordance with the physical principles that apply to normal persons.

By comparing the total heat production and the total nitrogen output with the energy value and composition of the diet it is possible to calculate precisely the weight of the body tissue oxidized to furnish the portion of energy given out but not contained in the diet. This gives the composition and the amount of body tissue destroyed.

From their attempts to determine the water exchange in their subjects the authors conclude that the organism is very unstable with regard to water. Even in nutritional balance the body may increase or diminish its percentage of water from day to day.

A low carbohydrate diet causing undernutrition will destroy large amounts of glycogen and cause a rapid weight loss for several days. A second phase then occurs with progressive water retention by the tissues. After several days the extra water is all given off and at the end of this third phase the total loss of weight from the inception of the underfeeding corresponds to the calculated weight of the tissues destroyed.

In conclusion, the authors state that obesity is always caused by an over abundant inflow of energy. The excess is deposited as fat. The disproportion arises from over-indulgence and ignorance or a condition such as lessened activity or a lowered basal metabolic rate. If the long-established food habits do not respond to the lessened demand, obesity is inevitable. MORRIS A. SLOCUM, M.D.

# GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

Loehr, W. Infection with Anaerobic Gas-Forming Bacilli, Particularly Its Significance in Surgical Affections (Die Infektion mit anaeroben Gaseed embacillen, insbesondere ihre Bedeutung als Infektionserreger chirurgischer Erkrankungen) *Schaermed Wchnschr*, 1929, 1, 433

The author limits his discussion to surgical conditions in which an anaerobic infection had been demonstrated definitely. As a result of the systematic investigations of Zeissler, it is now known that there are only fourteen or fifteen anaerobes which may be considered of pathogenic importance. In the first group of gas oedema bacilli are Fraenkel's gas bacillus, the cause of typical gas gangrene, Novy's bacillus of malignant oedema, the anthrax and para anthrax bacilli, and bacillus histolyticus. A pure infection by the last-named micro organism has never been observed in man, but a mixture of this bacillus with the other gas oedema organisms is extremely dangerous. In a second group, Zeissler places apathogenic spore formers, and in a third group, the pure toxin producers such as the tetanus and botulinus bacilli.

The examination for anaerobes is tedious because of the great difficulty in isolating the organisms. The bacilli live in symbiosis with each other and with aerobes and it is difficult to separate them from the symbiotic relationship. As a thorough bacteriological examination will take too long for prophylactic and therapeutic purposes in most cases, it is of great value to know the clinical manifestations of the various types.

The best known form of anaerobic infection is gas phlegmon or gas oedema. It must be emphasized, however, that gas formation does not always occur and therefore the diagnosis is not always obvious. Moreover, anaerobic sepsis may occur without typical local manifestations. A good example of anaerobic infection without gas formation is anaerobic peritonitis after gas gangrene of the uterus, or, more rarely, anaerobic infection of the fetus. In animal experimentation it has never been possible to cause gas formation in the abdominal cavity by infection with anaerobes although in other parts of the body these organisms have always caused typical gas gangrene. Another example of gas gangrene infection without

gas formation is anaerobic sepsis which closely resembles other forms of sepsis and can be recognized only from the results of cultures of the blood or the formation of metastatic gas abscesses. The author cites also a form of gas oedema following injections, thirty cases of which have been reported to date. He states that when we consider how frequently anaerobic spores can be demonstrated on injection instruments and in injection fluids, it appears evident that these infections are much more common than is generally believed. However, in most cases a suitable medium is not present for the development of the organisms. In spite of the fact that much of our food contains numerous anaerobes, these organisms rarely occur in the stomach because the stomach does not provide a nutrient medium suitable for them. They are quite rare also in the upper portions of the healthy small intestine, but occur more often in the lower portions of the small intestine and in the colon. In the author's opinion, the incidence of gas gangrene of the gastro intestinal tract as given in reports in the war literature is too high as these reports were based chiefly on autopsy findings. Loehr believes that it is the good circulation of the gastro intestinal tract which protects this part of the body from gas bacillus infection as there is certainly no specific defense mechanism. He states that a normal loop of intestine becomes subject to anaerobic invasion only when its nutrition is disturbed, as in ileus, or when it is exposed to concentrated toxins (appendicitis). Kinks and enteroliths hinder the self cleansing action of the intestine, therefore it is not surprising that gangrene of the appendix often extends only up to an enterolith. Although the abdominal cavity does not become specifically infected by anaerobes, it is affected by the general deleterious action of the toxemia. The resulting vascular paralysis causes engorgement of the blood vessels and a serous or hemorrhagic exudate in the abdominal, thoracic, and cranial cavities, although a true gas phlegmon of these parts is not observed during life.

The prophylaxis and treatment of all gas oedema infections consists of proper surgical treatment and serotherapy. The very favorable results obtained by the French in the World War and in Morocco indicate that we should employ serotherapy prophylactically in all conditions in which anaerobic infection is feared.

DEUS (2)



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# INTERNATIONAL ABSTRACT OF SURGERY

AUGUST, 1930

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Morris, J. H. Chronic Recurring Temporomaxillary Subluxation. Surgical Consideration of "Snapping Jaw," with the Report of a Successful Operative Result. *Surg, Gynec & Obst*, 1930, 1, 483.

Chronic recurring temporomaxillary subluxation or "snapping jaw" is usually attributed to abnormal periaricular relaxation which permits undue mobility of the condylar head of the inferior maxilla in the glenoid cavity.

In works on arthrology, the temporomaxillary articulation is classed as a diarthrosis, subdivision ginglmo arthrodese, signifying a mobile joint capable of executing both a hinge like and a gliding motion.

The joint is enveloped in a thin loose capsule by a capsular ligament passing from the margins of the glenoid cavity and the articular eminence immediately in front to the upper margin of the interarticular fibrocartilage and from the lower margin of this cartilage to the neck of the condyle, which it completely invests. The joint cavity is therefore divided by the interarticular fibrocartilage into two separate and unequal compartments.

The articulation is stabilized by three important ligaments—the external lateral ligament, the stylo mandibular ligament, and the internal lateral ligament.

The external lateral ligament is attached to the outer surface of the zygoma in front of the joint, when it is directed obliquely downward and backward to secure attachment to the outer and posterior border of the neck just below and behind the head.

The stylo mandibular ligament extends downward and forward from the tip of the styloid process to the posterior border of the angle of the jaw and is attached at a point distal to the axis of rotation of the bone.

The internal lateral ligament is disposed so as to stabilize lateral mobility of the inferior maxilla.

The articulation has three types of movement: (1) a hinge like motion about a transverse horizontal axis drawn tangentially to the upper articular surfaces of the condylar heads, which takes place entirely in the inferior synovial cavity, (2) an antero-posterior gliding movement along a horizontal plane, taking place entirely in the roomy upper compartment between the upper surface of the meniscus and the glenoid cavity, and (3) an oblique rotatory movement made up of two components, (a) a rotatory movement about a vertical axis through each condylar head, confined to the lower synovial compartment, and (b) an oblique gliding movement, confined to the upper compartment, the meniscus gliding forward and inward on one side as it moves backward and inward on the other.

In an investigation of the nature and causation of subluxation of the joint these structural and functional details must be taken into consideration.

Pringle suggests that under certain circumstances, e.g., sneezing with the mouth wide open, a sudden violent contraction of the internal pterygoid muscle may act to displace the loosely applied cartilage so that the thick central ridge lies obliquely instead of transversely. The cartilage then acts as a foreign body caught between the rolling condyle and the glenoid surface. The disk is crushed between the opposing bony surfaces and painful locking of the joint is apt to follow. These events cause stretching of the periaricular tissues, promoting recurrence of the same phenomena and giving rise to the annoying snapping noise characteristic of the subluxation.

Although superficially placed, the joint is difficult to approach surgically. Cosmetic demands limit the incision and the facial nerve, superficial temporal vessels, auriculotemporal nerve, and internal maxillary nerve must be protected.

For arthrotomy, a simple vertical incision in front of the pinna has usually proved to be quite adequate. This incision is carried down to the deep fascia. Dissections demonstrate that the temporofacial nerve remains deep to the deep or external

parotid fascia until it reaches a point well above the level of the zygoma where it pierces this fascia to continue its course superficially. The deep fascia of this region splits below into two layers to enclose the parotid in its fascial capsule, the external and internal leaves again uniting at the zygoma to become continuous with the temporal fascia. The operator may widely retract the vertical skin incision and transversely incise the external leaf of the parotid fascia for a distance of 2 in parallel with, and just below, the zygoma. As the nerve is deep to the fascia at this point, it is safe from injury, and the gland thus freed may be retracted downward and forward to carry the nerve with it out of the field of operation.

Operative effort must be directed to (1) the meniscus itself, which may require fixation or removal and (2) the unduly mobile condylar head and the abnormally relaxed capsule the former requiring limitation of its excursion and the latter some expedient to overcome periarthral laxity.

A classification of operative and non operative methods suggested for the treatment of subluxation of the inferior maxilla is discussed.

In conclusion the author cites a case in which joint scarification and plication of the lax capsule gave relief.

W. N. ROWLEY, M.D.

**Pichler H.** Resection, Plastic Operation and Prosthesis of the Jaw (Kieferresektion plastisch und prothese). *Fortschritt d. Zahnk.* 1929 v, 1027.

Not rarely patients with a malignant tumor of the jaw are injured when roentgen or radium irradiation is attempted before operation. Operation is far superior to every other method of treatment and its results are better the earlier it is performed. The removal of involved bone very considerably improves the effect of subsequent irradiation. If operation is done after irradiation, unfavorable postoperative disturbances may occur in the soft parts especially the skin as a result of externally unrecognizable irradiation injury. The defects produced by mutilating operations should be corrected by prosthetic dentistry. Under certain conditions a purely surgical operation may be supplemented by electrocoagulation and subsequent irradiation. Patients with tumors of the lower jaw are certainly much worse off than those with tumors of the upper jaw.

The factors upon which operability depends are discussed individually: the general condition, the area of involvement in the jaw, and the extension of the condition toward the brain, the base of the skull, the pharynx, the tongue, the cervical glands, and the skin. Favorable results are sometimes achieved in tumors of the upper jaw by resection, the early application of a prosthesis, and radium irradiation. Precautions must be taken to prevent neuralgia from radium necrosis. The nature, preparation and advantages of a hard rubber prosthesis for use after resection of the upper jaw are discussed.

Following the report of a case of true giant cell sarcoma (polymorphocellular spindle cell sarcoma)

of the upper jaw which may have developed on the basis of an osteodystrophy fibrosa and was removed operatively, Pichler discusses the procedures preferred today by various surgeons for overgrowth and undergrowth of the upper and lower jaws and askew biting and then describes certain procedures which he has devised himself. The latter include a modification of von Eiselsberg's step like sawing through of the lower jaw for the purpose of lengthening it in micrognathia and an orthopedic operative backward displacement for the protrusion of the dental process of the upper jaw in macrognathia.

In operations for cancer of the tongue the author has previously been entirely satisfied with median or paramedian section through the lower jaw. He never observed any difficulties in healing if the bone was not sutured and only a rubber plate was placed over the resected lower jaw next to the tongue. However he now prefers a procedure similar to that used by Krassin and proposes to make the sawed section in the form of a swallow's tail and at the same time to make it converge toward the oral cavity in such a way that the piece of bone looks like the step portion of an approximal gold inlay and is held in place by muscle tension. He states that in the chin portion where the bone is extraordinarily well nourished, such artificial pieces can be made without danger.

G. LORO SCHMIDT (?)

## EYE

**Evans J. N.** An Interpretation of Defects in the Visual Field. *Arch. Ophthalm.* 1930 III, 153.

Evans examined the visual fields in a large number of subjects and made maps of numerous blood vessel scotomata. Interest having been centered on fiber bundles to account for field defects he developed a technique for the observation of scotomata associated with involvement of the blood vessels and perivascular lymph spaces.

VIRGIL WESCOTT, M.D.

**Stine G. H.** Variations in Refraction of the Visual and Extraviscular Pupillary Zones. *Am. J. Ophthalm.* 1930 XIII, 107.

The author reports his skiascopic findings in 277 normal eyes examined under cycloplegia. He divided the pupillary glow into 5 zones—a central, an upper, a lower, a nasal, and a temporal zone. He found at times a decided difference in the refraction. He classified the difference as a positive aberration if there was a greater refractive power, i.e., more myopia in the eccentric zones, as negative, if the refractive power was less in those zones, and as mixed if the scissor movement was noted. Eighty three per cent of the subjects were under twenty years of age.

At times a variation of as much as 7 diopters was found between adjacent quadrants and a variation of as much as 7.50 diopters between the central zone and one of the quadrants. In no eye in this group was there perfect symmetry. The refraction was usually highest in the superior and nasal quadrants,

next highest in the temporal zone, and least in the inferior zone. The type and degree of aberration were not dependent on the kind or amount of refractive error nor on the size of the pupil. The lens was the most important factor producing the aberrations.

The article is concluded with a lengthy bibliography.

THOMAS D. ALLEN, M.D.

**Friedenwald, J. S.** Permeability of the Lens Capsule, with Special Reference to the Etiology of Senile Cataract. *Arch. Ophth.*, 1930, 11, 182.

Despite former opinions to the contrary, the work of Jess and Warburg demonstrates that the lens has a definite protein metabolism and a no less definite, but smaller carbohydrate metabolism. The permeability of the lens capsule places certain limitations on the character and amount of substances concerned in the metabolism. The author attempted to determine what substances can diffuse through the lens capsule, and whether a sufficient alteration in the permeability of the capsule takes place to interfere with the metabolism of the lens and thus cause cataract. From this study the following conclusions are drawn:

1. The capsule is permeable to all electrolytes and true solutes in water.
2. The capsule acts as a semi-permeable membrane, and its permeability is decreased by calcium, cyanides, and proteins.
3. The permeability varies in individuals, but not in species, and is much greater in young animals than in older animals.
4. Exposure of the capsule to the action of cataractous lens cortex increases its permeability.

VIRGIL WESCOTT, M.D.

## EAR

**Valerio, A.** A Clinical Study of Mastoiditis (Ensaios clinico das mastoidites). *Arch. Brasil. de Med.*, 1930, 11, 72.

Mastoiditis may be caused by otitis, a general infection such as grip, syphilis or tuberculosis, certain diseases such as diabetes or arthritis, or accidents in the region of the ear. It may begin slowly or suddenly. In some cases it is subacute. The diagnosis is made from the history, the discharge from the ear, the localization of the pain, sensitiveness on pressure, and the findings of percussion and otoscopic and roentgen examination.

The prognosis is always doubtful. If operation is not performed, the pus may be evacuated spontaneously at the lowest point. If this does not occur, a serious complication such as facial paralysis, extradural abscess, pachymeningitis, thrombophlebitis, meningitis, meningoencephalitis, pyæmia, cerebral or cerebellar abscess, acute labyrinthitis, or incurable deafness may develop. Operation is justified by persistent spontaneous or provoked pain and by irregularity or disappearance of the suppuration coincident with an increase in the pain and continuous fever.

Mastoiditis can often be prevented by performing paracentesis systematically in acute otitis when spontaneous perforation does not take place.

The operation for mastoiditis may be a simple antrotomy or a partial or total antromastoidectomy.

Partial or diffuse incomplete labyrinthitis should never be operated upon. In acute labyrinthitis, the labyrinth may be trephined if there is a gradually increasing hyperlymphocytosis in the spinal fluid and if the vestibular symptoms increase constantly.

AUDREY G. MORGAN, M.D.

## NOSE AND SINUSES

**Borries, G. V. T.** On Nose Bleeding. *J. Laryngol. & Otol.*, 1930, 51, 81.

Nose bleeding may border on a physiological process when it results from general causes which increase the fragility of the blood vessels or lower the coagulability of the blood and when it is produced by factors exceeding normal physiological limits only very slightly. In other cases it may be a manifestation of a hæmorrhagic diathesis.

The most common causes of nose bleeding are (1) traumatic lesions, (2) foreign bodies in the nose, (3) inflammations, (4) tumors, (5) internal diseases associated with an increase in the blood pressure, (6) diseases of the blood (hæmorrhagic diatheses), (7) lesions of the liver, and (8) acute phosphorus poisoning.

Among the more severe traumatic lesions associated with nose bleeding are fracture of the nasal bones, fracture of the base of the skull, and post-operative lesions.

Inflammations which may cause bleeding from the nose may be divided into acute and chronic non-specific inflammations and specific inflammations such as those due to tuberculosis and syphilis.

Special forms of nose bleeding include epistaxis associated with menstruation, pregnancy, and the climacterium and habitual nose bleeding.

The treatment consists of measures to remove the cause and local measures to stop the hæmorrhage. The usual local treatment is postnasal tamponade with cocaine adrenalin or iodolorm or xeroform gauze. In some cases ligation of the external carotid may be required. The tampons may be left in place for several days if necessary. In their removal great care must be taken not to start the hæmorrhage anew.

The author emphasizes the following points:

1. The most frequent cause of nose bleeding is rupture of vessels in Krieselbach's area due to anterior dry rhinitis, excoriation, blood crusts, ulcer, telangiectases, or perforation.

2. Anterior dry rhinitis is the most frequent cause of septal perforations. A small perforation in Krieselbach's area which involves only the cartilaginous part of the septum is never syphilitic; it is the result of anterior dry rhinitis or a tuberculous process.

3. In nose bleeding due to fracture of the nose the fracture must be reduced. The external swelling will

usually make it impossible to decide whether any disfigurement of the nose will result. A septal hematoma the size of half a cherry in each nostril in cases of traumatic nose bleeding is an indication for immediate operation.

4 Among infectious diseases, nose bleeding is particularly frequent in typhoid fever, influenza, and smallpox.

5 A sanguineous purulent coryza is present in cases of nasal foreign bodies, diphtheria, and congenital syphilis of infancy. A persistent coryza in a poorly nourished infant, especially when the secretion is blood tinged, is suggestive of congenital syphilis.

6 In diseases of the nose, severe spontaneous nose bleeding is due most often to a nasopharyngeal fibroma or oxoza.

7 Spontaneous unilateral epistaxis in an elderly person especially when it is associated with unilateral blocking of the nasal passage, is strongly suggestive of malignant tumor.

8 Of the extranasal diseases which may be associated with nasal bleeding the most important are chronic nephritis, arteriosclerosis, heart lesions, and diseases of the blood such as leukæmia, anemia, and hæmorrhagic diatheses. MANFORD R. WALTZ, M.D.

**Axhausen, G.** Plastic Closure of Openings Between the Antrum and Buccal Cavity (Ueber den plastischen Verschluss von Antrum Mundhöhlenverbindungen). *Deutsche Monatsschrift f. Zahnk.* 1930, LVIII, 193.

In the course of one year the author saw twenty six patients with openings between the oral cavity and the maxillary sinus. An operative procedure to close such an opening must be technically easy, must not sacrifice functionally important parts (teeth, bone), and must not leave an open wound. The Zange, Fichler and Peters operations for fistulae which open on the crest of the alveolar ridge do not meet all requirements.

The author describes minutely and with illustrations a procedure with which he has obtained good results even in cases operated upon elsewhere unsuccessfully by the Zange or Fichler method. A rectangular incision extending down to the bone and into the buccal cavity is made about the fistula and the fistula is excised together with the gum. Then by extending the long side of the rectangle into the buccal space a flap of mucous membrane lined with the upper layer of muscle of the cheek and pedicled toward the cheek is cut. This is turned into the quadrangular opening in the gum, and secured there by sutures in the mucosa of the palate and buccal mucous membrane. The defect formed by the removal of the flap is easily closed by suturing its lips together. A special plastic closure of the upper opening of the fistula in the antrum or of the defect in the antral mucosa is usually necessary.

Of the twenty six cases operated upon in this way, smooth healing occurred in twenty five. Even in the one exception the flap grew fast and only a

small fistula at the neck of the adjacent tooth remained to be closed by plastic operation. The author shows by word and picture that the procedure described may be employed successfully for the immediate closure of large, fresh openings into the maxillary antrum such as may be produced by a difficult tooth extraction, and for the covering of large antral openings made during partial excisions of the maxilla for carcinoma.

Communications between the antrum and the oral cavity in the canine fossa are dealt with by the Lautenschlager method. In this procedure, two flaps pedicled toward the buccal opening are made, freed up to the opening, thrust into it, and, when necessary, sutured together. When the communication is small or of moderate size the deep closure is covered by suturing together the lips of the oral wound. When it is very large, as following a Partsch I operation, the deep closure is covered by turning a laterally pedicled mucosa muscle flap from the cheek.

The author emphasizes that an infected antrum and a large cyst space must have adequate drainage into the nasal cavity. GEORG SCHMIDT (?)

## MOUTH

**Kleine, H. O.** Congenital Basal Cell Tumors of the Gums. A Contribution to the Histogenesis of So Called Congenital Epulis (Die angeborenen Basalzelltumoren der Gingiva. Beitrag zur Histogenese der sogenannten Epulis congenita). *Arch. f. Gynæk.*, 1929, CXXXVIII, 297.

The author reports two tumors of the gums of a peculiar type which occurred in otherwise healthy newborn children. After describing the histological findings in detail and reviewing the literature he comes to the conclusion that these neoplasms were congenital basal cell tumors. In support of his opinion he cites the following facts:

1 The cells of the tumor, which was surrounded on all sides by stratified epithelium of the oral mucosa showed a distinct connection with the basal epithelium. The tumor cells lying on the basal layer or close to it were smaller than those lying more centrally. Moreover, the tumor cells were not massed near the basal layer, a fact which can probably be explained by the growth of the neoplasm from within outward toward the periphery. On the contrary, only isolated tumor cells or at the most small groups of such cells, were found lying immediately next to the basal layer.

2 The tumor cells did not become cornified, but always preserved the embryonal character of the germinative layer.

3 In their relation to the connective tissue, the tumor cells showed the same behavior as Krompecher tumors. The causes of the marked increase in the connective tissue are unexplained as yet. The correctness of Krompecher's view that, in case of increased nutrition, the basal epithelium can become changed into connective tissue in the mature

organism (and certainly, therefore, in the embryonal organism) is very doubtful. The difficult problem of metaplasia comes into question here. Moreover, the connective tissue surrounding the tumor cells has a tendency to undergo hyaline degeneration as in the Krompecher tumors.

4. The basal epithelium has an inherent tendency toward gland formation. In general, the basal cell should be considered less from a topographic than a functional standpoint. In the cases reported there was a formation of mucous gland cells. Their mucoid nature was confirmed by the straining reaction of the intracellular granules, the organoid structure of the tumor with the development of a rich capillary network, the formation of mucous in the immediate vicinity of the cells, and the anlage of excretory ducts.

5. Elements that can be stained with sudan have been found in embryonal basal cells after the sixth month (Nicolau), and the occurrence of the same diffuse reaction to sudan in both the tumor cells and the basal layer may be interpreted as an indication of a common relationship between the two groups of cells.

6. There are certain relationships to the xanthomata of undetermined origin, the cellular fat storage of which can be explained at least partly by lymph and blood stasis. Corten and others have called attention to the fact that immature, not fully differentiated epithelial cells (basal cells) are especially predisposed to xanthomatous change.

7. We know that the basal cell tumors of Krompecher (in contrast to squamous epithelial carcinomata) usually do not metastasize. The tumors herewith reported were clinically not malignant, there were no metastases or recurrences.

In conclusions, the author says that similar tumors have been observed by Massin, Olivier, Fueth, and Schoor.

HANS O. NEUMANN (G)

Bruschwig, A. Mixed Tumors of the Tongue and Sublingual Gland. *Surg., Gynec. & Obst.*, 1930, 1, 407.

So called "mixed tumors" are found not infrequently in the salivary glands, buccal mucosa, palate, lips, and orbit. They vary histologically but have in common certain epithelial elements and "mesothelial" elements such as hyaline cartilage, immature fibrous connective tissue, and mucous tissue. There is also a type with cuboidal epithelial cells arranged in tubules or cords which are called "cylindromata."

Mixed tumors of the sublingual gland are very rare. The author has been able to find only 2 reported in the literature. Of 360 mixed tumors of the salivary glands collected and studied by Heinecke, 80 per cent occurred in the parotid gland. The author reports a case of mixed tumor of the cylindroma type occurring in the sublingual gland. The growth was apparently benign for nineteen years, but at the end of that time became malignant, causing extensive local destruction and forming metastases in the lungs and pleura.

Only 10 mixed tumors of the tongue have been found in the literature. These are reviewed. They all resembled closely the tumors occurring in the salivary glands. The treatment consisted of excision. Also reported is a case of slowly growing malignant mixed tumor of the tongue of several years' duration which formed metastases in the regional lymph nodes. Combined excision and radium therapy appeared to eradicate the process.

LAWRENCE CURTIS, M.D.

## PHARYNX

Sonnenschein, R. Mixed Tumors in the Soft Palate. Reports of Two Cases and a Survey of the Recent Literature. *Arch. Laryngol.*, 1930, 21, 137.

Mixed tumors involving the soft palate are rare. Their origin is not definitely known. According to one theory, they are entirely epithelial, whereas according to another, they are the result of accidental sequestration of embryonal cells during the early and complicated development of the base of the neck. They are probably individual entities not related to the structures in which they occur.

While they are apparently benign, they often recur after removal. If frequently disturbed, they may become locally destructive even though they produce no metastases.

When histologically examined, they may show an apparently malignant character although the clinical history usually indicates that they are benign. The prognosis should be determined from the history of the case rather than from the histological observations.

JAMES C. BRASWELL, M.D.

## NECK

Moller, E. A Fatal Case of Exophthalmic Goiter Commencing During Thyroid Gland Administration. *Acta med. Scand.*, 1930, LXXIII, 1.

The author reports a case of exophthalmic goiter which began after the patient had taken thyroid gland tablets for a few weeks to reduce her weight. Although the thyroid medication was stopped immediately, the disease progressed and in six months terminated fatally. The diagnosis was confirmed at autopsy.

On lumbar puncture two days before death, the albumin and globulin of the spinal fluid were found to be increased. The number of cells was normal.

The possible importance of hyperthyroidism in the etiology of exophthalmic goiter is discussed.

Hueck, H. Results of the Operative Treatment of Basedow's Disease (Ergebnisse der operativen Behandlung der Basedowkrankheit). *Deutsche Zeitschr. f. Chir.*, 1929, CCXXI, 171.

The author begins his article with the statement that internists in general treat cases of Basedow's disease conservatively whereas surgeons are willing to forego operation and attempt treatment by conservative measures only in mild cases. He believes



that internists and surgeons should get together in a study of their end results and that as a result of such a study they would agree to classify the cases into the following 3 groups

Group 1 The hyperthyroides and mild cases of Basedow's disease with only a slight increase in the basal metabolism, without definite eye signs, and without severe nervous symptoms

Group 2 Moderately severe Basedow's disease with marked eye signs but with only slight nervous symptoms and an increase in the basal metabolism of from 30 to 50 per cent

Group 3 The most severe cases in which all symptoms are very pronounced and the basal metabolism is between 50 and 100 per cent

In cases of Group 1, conservative treatment may be given. Roentgen treatment has an excellent effect systematic irradiation often resulting in a complete cure. Even in this group however the surgeon usually obtains better results. The author uses irradiation for patients who fear operation but only for those with true hyperthyroides and not for those with toxic adenoma

In the second group also treatment by irradiation may be beneficial, but its failures are more numerous than in the first group. Operation gives the best results and its mortality is almost nil. However the value of irradiation cannot be denied

In Group 3 the results of conservative treatment, including irradiation are very poor and the best treatment is the earliest possible operation. While operation has a high mortality and cannot prevent recurrence with certainty, its results are on the whole not unfavorable. The problem for the future in the operative treatment is the determination of the best pre operative preparation. According to statistics the incidence of cure following operation ranges from 65 to 90 per cent and the mortality between 5 and 7 per cent. The statistics of individual surgeons are sometimes excellent. Hasper for example, reported 150 operations performed in the Hochenegg clinic without a single death.

The author believes that geographical differences are an important fact explaining differences in results. He emphasizes the relatively high mortality under conservative measures. This is higher than the mortality of operation. Moreover the incidence of cure following conservative treatment is less than that following operative treatment.

In conclusion Ifueck discusses the material from the Rostock clinic which shows a cure in 78 per cent of cases. He emphasizes the importance of the basal metabolism test which indicates the effect of preparatory treatment and operation and of the end results. He recommends preparatory treatment with Lugol's solution.

VOGELER (Z)

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Veraguth, O. Tumors of the Central Nervous System (Ueber Tumoren am Zentralnervensystem) *Deutsche Ztschr f. Neuroh.*, 1929, CIV, 171

The author discusses the problem of the development of neurinomata and endotheliomata from the standpoint of the pathological anatomy of tumors of the central nervous system and on the basis of a case of Recklinghausen's disease with intramedullary, extramedullary, and meningeal nodes. The theory of Verocay, Masson, Cornu, and others that these structures are of ectodermal origin is contrasted with the theory held by Krumboltz, Quattri, Penfield, Casper, and others that they are of mesodermal origin. In a review of the embryological evidence, attention is called to the very suggestive investigations of Oberling and Antoni, both of whom believe that the neural crest is the origin of the normal endothelial sheath and that the abnormal development of this crest is the prerequisite for intramedullary neurinomata and meningiomata. The secondary changes caused by tumors of the nervous system in the bony coverings, the meninges, the cerebrospinal fluid, and the parenchyma near the neoplasms are described briefly.

The physiopathology of the central nervous system affected by an epicentral tumor shows three stages of capacity for accommodation: an asymptomatic stage, a more or less oligosymptomatic stage, and a stage of lack of accommodation. The second stage may persist for many years without change or may show remissions of the disease picture or a characteristic, gradually increasing development of symptoms. In the third stage the complete lack of accommodation capacity does not necessarily mean the immediate onset of an irreversible condition. When such a state exists, it depends upon many and not merely local factors. Among the dynamic distant effects in the nervous system, the diastasis warrants special consideration in the presence of epicentral tumors.

Although the clinical manifestations of tumors of the central nervous system have been well studied, surprising diagnostic errors are still made even by men with considerable experience. With regard to the differential diagnosis attention is called to the subdural hematoma which occasionally has a latent period as long as three months, also to an apparently characteristic peculiarity of patients suffering from brain abscess, namely repeated placing of the hand in the region of the focus. The differential diagnosis of epicentral or endocentral tumor is discussed in detail as regards tumors of the anterior cerebral fossae and, with reference to de-

tailed tables, as regards tumors of the posterior cerebral fossae and the vertebral canal. In a table of differential signs the probability of an endocentral or exocentral site is indicated by the words "frequent," "rare," and "possible." For doubtful cases of spinal cord tumors, exploratory laminectomy or opening of the dura is still recommended as a last resort in spite of the use of lipiodol.

Finally, Veraguth discusses the fundamental principles of the treatment of tumors of the central nervous system. He states that operation is contraindicated only in cases of malignant and multiple tumors and cases of tumors situated at the bony base of the skull. In cases of pinealoma, the indication for operation should be determined with great reserve. Roentgen therapy is recommended as after treatment following all operations. Of the requisites for success in operations for tumors of the central nervous system, the author mentions especially early diagnosis, timely operation, the application of all suitable advances of surgery, and a correct technique.

ADOLF WIEDEMANN (Z)

## SPINAL CORD AND ITS COVERINGS

Alurralde, M., and Seplich, M. J. Cauda Equina Syndrome, Fibrosarcoma of the Dura Mater (Sindrome de cola de caballo, fibrosarcoma de la duramadre). *Rev de especialidades Asoc med argent.*, 19-9, IV, 1270

The case reported was that of a man twenty four years of age. There was first a period of pain in the left leg which simulated sciatica and was treated as such by the first physician who saw the patient. This was followed by weakness of the muscles in walking. Two months later, pain and muscle weakness developed in the other leg. This painful paraplegia was followed by retention on the part of the sphincters. There was pain in the sciatic and crural nerves with paralysis and degenerative atrophy of the muscles of both legs. The response of the muscles of the thighs to electrical stimulation showed only quantitative changes.

These symptoms developed over a period of nine months. The diagnosis of sciatica which was made at first was rejected because of the muscle weakness caused by the trophic changes in the muscles which were revealed by electrical examination. Meningomyelitis of the dorsolumbar or lumbar region was ruled out by the early onset, persistence, and distribution of the pain, the weakness and degenerative atrophy of the muscles which was marked in the legs and slight in the thighs, the distribution of the disturbance of sensation which was perianal or saddle-shaped with slight extension to the inner surfaces of both legs, and the absence of the pupillary signs of

nerve syphilis. The only condition that could have caused a syndrome with pain, atrophy, and areflexia characteristic of a peripheral lesion and with retention of urine and feces and distribution of sensation characteristic of central disease was a lesion of the cauda equina with or without involvement of the sacral cord and conus terminalis. The tentative diagnosis of compression of the cauda equina by a tumor was confirmed by roentgen examination and operation disclosed a fibrosarcoma of the dura mater. Uneventful recovery resulted.

AUDREY G. MORGAN, M.D.

### SYMPATHETIC NERVES

Adson, A. W. and Brown, G. E. Thoracic and Lumbar Sympathetic Ganglionectomy in Peripheral Vascular Diseases. Therapeutic Value. *J. Am. Med. Ass.*, 1930, LVIII, 250.

With the advent of surgical procedures capable of producing arterial dilatation in the extremities, it becomes highly important clearly to define the types of vascular diseases that may be benefited by vasodilator measures. Considerable discrimination and caution should be employed in the selection of operable cases.

Primary diseases of the arteries of the extremities can be classified into two main groups: (1) those of a vasomotor or functional nature of which there are two types: vasoconstrictor disturbances (mild spastic attacks and Raynaud's disease) and vasodilator disturbances (erythromelalgia), and (2) those of organic disease of the arteries (thromboangitis obliterans and arteriosclerosis with thrombosis).

Sympathetic ganglionectomy and trunk resection is a surgical procedure of considerable magnitude which we are justified in using in the treatment of advanced cases of Raynaud's disease in the early developing vasospastic cases of scleroderma and in cases of thromboangitis obliterans in which vasospasm of the collateral arteries exists. The operation is probably indicated in allied and borderline cases but should be employed with caution, as it is not a cure all for all peripheral vascular diseases.

### MISCELLANEOUS

Parker, H. L. Pain of Central Origin. A Discussion of Some Diseases of the Central Nervous System in Which Pain Is a Main Symptom. *Am. J. Med. Sc.*, 1930, CLXXX, 241.

The author studied only cases in which the pain was produced by a definite structural alteration of the central nervous system. He says that it is difficult to understand why in the many different lesions involving the spinal cord it is so seldom that pain is produced which may be considered of central origin and quite apart from that due to involvement of the dorsal roots. In a group of cases of gunshot injuries indirectly affecting the spinal cord which were reported by Holmes, the injury was followed almost immediately by the development, below the

level of the lesion, of a burning, shooting, stabbing pain which was more marked in the lower extremity that had become paralyzed while remaining normally sensitive. This pain was poorly described and poorly localized by the patient. It was increased by peripheral stimuli, particularly by passive movement of the leg and even by jarring of the bed, and it was seldom severe or persistent in the side that was anesthetic to pain, touch or temperature. Pin prick and thermal stimuli were extremely unpleasant and the responses to them tended to radiate widely over the limb although the thresholds for pain and thermal stimuli were unaltered or even slightly raised. The pain reached its maximum in about two or three days and gradually subsided in about three weeks.

Cases of syringomyelia have been reported in which pain was persistent throughout the course of the disease. It is possible for hydromyelia to cause pain. Both intramedullary and extramedullary tumors involving the spinal cord sometimes produce pains which are not segmentally distributed or due to compression of the roots, but occur in regions well below the site of the lesions. Often the pain is felt in a lower extremity on the side opposite that of the tumor; it may come on early in the course of the compression of the cord by the tumor and before root pains begin. Root pains may never develop, and the distant pains may constitute a prominent symptom. Constant severe burning pains in the lower extremities are not uncommon following the removal of spinal cord tumors; they develop coincidentally with the lessening of the anesthesia and during convalescence from operation. Later, with the restitution of both motor and sensory function, they cease. Experimentally, pain may be produced by irritation of the structures within the spinal cord.

The spinothalamic tracts are continued up into the medulla and as they are dorsolateral to the inferior olivary nucleus they come in close relationship with the spinal root of the fifth nerve and its nucleus. A single lesion in this region may involve both of these structures and may produce anesthesia for pain and temperature on the side of the lesion in the area supplied by the fifth nerve as well as in the opposite side of the body. It is not generally known that pain may occur in one or more of the anesthetic areas.

Pain may develop not only in cases of syringomyelia of the spinal cord, but also in cases in which this disease attacks the medulla. The author has observed two cases of tumor involving the fourth ventricle in which the early vomiting so characteristic of the lesion was associated with abdominal pain poorly localized and poorly described by the patient.

Just as in the medulla various lesions situated in the pons may give rise to pain. Herpes involving the fifth cranial nerve, especially in its first and second divisions, is often associated with persistent, severe, constant burning pain, an unpleasant paresthesia and hypersensitivity in the region involved. In

ticularly in elderly persons, these symptoms may persist for many years after the acute phase has passed. Often the scars which are left are anæsthetic or anæsthesia is spread over wider areas, and at any time in the course of this so called postherpetic neuralgia around the forehead, orbit, and cheek there may be a strange combination of pain, hyperæsthesia, and anæsthesia.

Injection of alcohol into the nerve or its ganglion, avulsion of the supra orbital nerve, and even section of the posterior root of the gasserian ganglion or avulsion of the ganglion has been done for relief of pain, but without constant success.

Recent writers, including Wilson, have agreed that spontaneous pains and various types of unpleasant sensations hitherto considered characteristic of lesions of the thalamus may arise as sequels to structural disease anywhere below the thalamic level. Although the so-called syndrome of the thalamus is no longer considered peculiar to thalamic lesions, the original work of Dejerine and Roussy is worth recalling. An interesting feature of thalamic lesions is the effect of emotion on patients with such lesions. In cases cited by Head, music was peculiarly likely to evoke a different reaction on the two halves of the body. One of the patients could not go to church because he "could not stand the hymns on his af-

ected side." Another stated that during the funeral service for the late King Edward VII he felt "a horrid feeling come on in the affected side and the leg was screwed up and started to shake" as soon as the choir began to sing. In many of these patients, therefore, the mental emotions evoked by music or disagreeable sounds intensified preexisting pains and discomfort. Among other lesions of the thalamus producing the so called thalamic syndrome are inflammations such as epidemic encephalitis, traumatic lesions, and tumors.

With regard to pains arising from cortical lesions there has been some difference of opinion. Clinically, however, the pain produced by pathological irritative lesions is usually not marked and is seldom continuous like that produced by lesions in the thalamus and in levels below it. More often, it is paroxysmal and appears as a sensory component preceding a jacksonian or general convulsion. Sensory auras in the form of tingling sensations, a sensation of formation, wave like sensations, feelings of constriction, and, according to Foerster, deep, dull pains may develop in a limb or in one side of the body before convulsive movements begin. It is common knowledge also that, especially in children, painful auras in the form of abdominal pains frequently usher in general convulsive seizures or attacks of petit mal.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Keynes G Radium Treatment of Carcinoma of the Breast *Lancet* 1930 cccviii 439

There are three methods of applying radium to mammary carcinoma (1) the external application of radium plaques over a diffusing medium made of a mixture of sawdust and wax, (2) irradiation by a beam of rays from a so called bomb, and (3) burial in the tissues of radium in suitable form. The author prefers the third method because it is based upon sound surgical principles. He implants platinum needles containing radium into the tissues in such a way that not only the primary growth but also every accessible area of lymphatic drainage is adequately irradiated. The distribution is in and beneath the breast beneath the pectoral muscles in the axilla on the costocoracoid membrane above the clavicle and in the upper three or four intercostal spaces. The two variable factors in the process are the time of exposure and the size of the mammary gland and the tumor mass. The principle involved is long exposure (usually for seven days) to a small dose of radium.

Keynes reviews 140 cases. In the first 50 the diagnosis was established by biopsy shortly after irradiation but in the others this method was abandoned as a routine procedure because in several instances implantation nodules appeared. Keynes says that after a proper dose of radium primary growths may gradually disappear in from six to nine months but a certain number shrink to a minimal size and then remain stationary. A residual tumor may consist only of fibrous connective tissue or may still contain active carcinoma cells in which case a repeated radium treatment should be given. As many as 4 such irradiations have been done on 1 patient. Permanent residual tumors are excised. When examined histologically they are usually found to consist of fibrous connective tissue only but in some instances structureless remnants of carcinoma cells have been discovered within them.

Of the 140 patients whose cases are reviewed 108 were considered operable. One hundred and one of those whose condition was regarded as operable and 22 of the 41 whose condition was regarded as inoperable are alive from one to five years after the irradiation. In 13 cases a tumor mass had been surgically removed before irradiation and found to be carcinoma. In 1 of these a recurrence took place. From 13 patients a residual swelling was resected. One hundred and nine patients had radium treatment only. Of these 23 had 2 treatments, 3 had 3 treatments and 2 had 4 treatments.

The objection to radium treatment of the breast lies in the danger of injury to other structures such

as piercing of the pleura in an intercostal space, piercing of a nerve or a blood vessel, or possibly, piercing of the pericardium.

The author is convinced that radium irradiation is the treatment of choice in early cases because it usually causes the tumor to disappear. It produces no oedema of the arm or mutilation and it is seldom followed by recurrence. J DANIEL WILLEMS M D

## TRACHEA, LUNGS, AND PLEURA

Bradford Sir J R Massive Collapse of the Lung *Lancet* 1930 cccviii 331

Massive collapse of the lung may result from paralysis of the respiratory muscles or from bronchial obstruction but there is also a group of cases in which it is necessary to look for some other mechanism.

The most striking physical signs of the condition are absolute immobility of the chest wall on the affected side and displacement of the heart and abdominal viscera resulting from upward displacement of the diaphragm. The heart may be displaced to a degree suggesting congenital transposition of the viscera. In the early stage of the condition there is weakness or even complete extinction of the breath sounds on the involved side. In the second stage there is tubular breathing of the most perfect variety which in many cases is much more marked than that associated with pneumonic consolidation. This sign will give rise to confusion unless the possibility of massive collapse is borne in mind. In the later stages crepitations and râles suggestive of pneumonia develop.

The degree of collapse may be far out of proportion to the symptoms. In some cases symptoms may be totally wanting whereas in others dyspnoea of marked severity may be present, and in the later stages especially when fine râles and crepitations are noted the condition may cause cough with expectoration. The author emphasizes that a very large area of one lung may be collapsed without the development of serious respiratory symptoms.

The basal portions of the lung are the portions most liable to collapse but the entire lung may be affected. In some cases the condition may be bilateral. A striking feature is the rapidity with which the physical signs change. The inflammatory changes that may occur vary from pleurisy to bronchopneumonia. When such changes develop the diagnosis of collapse is impossible unless the case has been observed from the beginning.

The fact that a very slight lesion on one side of the chest may lead to extreme collapse of the opposite lung in the course of a few hours can be explained only on the basis of a reflex mechanism of some kind. It cannot be explained by bronchial

obstruction or respiratory paralysis. The author believes that the reflex mechanism acts primarily on the diaphragm and the intercostal muscles, thereby bringing about immobility of the chest wall which results in absorption of the air in the lung.

ANTHONY F. SAVA, M.D.

**Bezançon, Azoulay, and Duruy. Primary Carcinoma of the Left Lung with Cavitation and Abscess Formation** (*Forme cavitaire d'un cancer primitif du poulmon gauche à type d'abcès putride*). *Bull et mém Soc méd d'hop de Par*, 1929, *xl*, 1478.

The case reported was that of a typographer fifty one years old who, in January, 1922, was seized with pain in the left chest associated with dyspnea, hæmoptysis, and a temperature of 39 degrees C. This attack was followed by a cough and expectoration. During the succeeding five years the patient experienced three similar attacks without hæmoptysis. In July, 1927, the hæmoptysis recurred and thereafter he remained in bed with fever, morning sweats, a severe cough, and constantly increasing foul expectoration.

Physical examination shortly before the patient's death in December, 1927, revealed a flatness, a feeling of resistance, and absence of breath sounds in the base of the left lung and roentgen examination disclosed in the same lobe a cavity the size of an orange, which had a fluid level. The sputum amounted to 250 gm daily. It was seropurulent, greenish, and odorless.

At autopsy, the lower lobe of the left lung was found to be adherent to the chest wall by a hard, white lardaceous tissue. The lobe contained a cavity the size of an orange, the walls of which were formed by nodular, hard, white tissue. Histological examination confirmed the diagnosis of squamous carcinoma.

C. D. HAAGENSEN, M.D.

**Paterson, R. Roentgenological Aspects of Empyema**. *Am J Surg*, 1930, *viii*, 638.  
**Stoloff, E. G. Radiological Demonstration of Pleurisy in Children**. *Am J Surg*, 1930, *viii*, 662.

PATERSON states that in suspected cases of empyema the roentgenologist's cooperation is required for the diagnosis of the presence, amount, and position of fluid in the pleural cavity, and in established cases, it is required to observe the progress of the disease, to determine the effects of surgical procedures, and to elucidate factors preventing resolution.

He discusses the application of the various roentgenological methods used in the study of empyema and presents a number of excellent roentgenograms. He emphasizes that the roentgenological and clinical findings should be correlated after independent appraisal of the condition by the roentgenologist and clinician.

STOLOFF also presents a number of excellent roentgenograms. He states that the pleurae are not roentgenologically visible in their normal condition and relationship to the other parts of the

chest, but with the deposition of fibrin in even the layers the affected part of the pleura is outlined by a shadow. The shadow is seen as a fine hairline density closely adjacent to the lateral thoracic wall or in the regions of the interlobar fissures. It may be encountered early in a pneumonic process with which pleurisy is associated or later, when it is residual to a serous or purulent effusion.

The initial X-ray evidence of free serous effusion is always manifested at the most dependent portions of the chest, in the costophrenic sinuses of the bases.

The accumulation of large amounts of fluid in the pleural cavity is associated with a widening of the interspaces and with a fullness and immobility of the affected side, observed fluoroscopically, which are characteristic of such effusions in children.

Empyema may arise from a serous effusion which has become purulent, from the rupture of an abscess into the pleural cavity, or from a fibrinopurulent exudate arising in pneumonia.

the interlobar fissures is given and the characteristic shadows are described

After the resolution of a pneumonic infiltration a fine hairline or narrow band like shadow may appear adjacent to the lateral costal wall as the result of fibrosis caused by infiltration. Fibrous adhesions between the pleura and the diaphragm or mediastinum frequently follow pulmonary inflammation. Their presence may not be seen, but is suggested by impairment of movement of the diaphragm or the mediastinum noted when the patient is studied fluoroscopically.

In infancy and childhood pleural thickening or evadation may be suggested by the position of the scapula the inner margin of which may overlap the periphery of the lung casting a linear shadow parallel with the outer boundary of the thorax. The differentiation of this shadow from that of a pleural thickening may be made by demonstrating its continuity with the shadow of the rest of the scapula. An erroneous diagnosis of pleural thickening or evadation is sometimes caused also by rachitic widening of the epiphyses of the ribs at the sternal junctions. Occasionally this widening is so marked that the shadows are continuous and suggest a ribbon shaped shadow adjacent to the lateral thoracic wall. However close examination will show evidence of rickets, and the clinical history and signs will definitely eliminate pleural disease.

J FRANK DOUGHERTY M D

### HEART AND PERICARDIUM

Schloffer, H. Cardiolytisis (Zur Cardiol., e) *Med Klin*, 1929, 24, 1777

By the term "cardiolytisis" (Drauer) was formerly understood the liberation of the heart from adhesions to the anterior chest wall by rib resection. By this procedure the systolic retraction of the chest wall and the diastolic driving forward of the cardiac region are relieved. Guleke has reported sixty cases.

For several years another operation, decortication of the heart (Delorme), has been frequently performed in cases of extensive pericarditic scar tissue. By this procedure diastolic dilatation is again rendered possible. The first cases were operated upon by Sauerbruch and Rehn. In 25 per cent of such cases the condition is of tuberculous origin.

Following the recommendation of Volhard and Schmieden, a large window is cut in the chest wall the pleura pushed to one side and the pericardium then resected. The greatest difficulty lies in estimating the depth in which it is necessary to work to avoid entering the ventricle, the auricle, and the vena cava. It is best to free the left ventricle first and then the right ventricle. At least one phrenic nerve must be preserved.

Of thirty six patients subjected to this operation, eight died during or soon after the operation. Of the thirty one on whom the operation could be completed, four died of cardiac insufficiency, one of acute dilatation, and two of the original trouble (the

operation was not done with sufficient thoroughness), and one of insufficiency of the liver with marked catexia. Twenty were benefited by the operation—one of Sauerbruch's patients for eleven years and seven others for more than a year.

The author recommends more frequent use of the operation, but emphasizes the necessity for timely diagnosis and timely intervention. He states that to date only a few young persons with cicatricial pericarditis have been operated upon in the manner described.

Schloffer reports a case in which calcification of the pericardium was found. The patient was a boy seventeen years of age who had been ailing since earliest childhood. He presented dilatation of the abdomen, but no certain cause of pericarditis. Swelling of the legs and scrotum had been present for a year. Examination in the Nonnebrook Clinic revealed marked ascites, hydrothorax, slight enlargement of the heart toward the right, systolic retraction, no change in the dullness with a change of posture, a rhythmic, paradoxical pulse of about 100 beats per minute, clear heart tones, no congestion of the veins of the neck, and enlargement of the liver. The secretion of urine did not exceed 500 gm. per day. Roentgen examination disclosed enlargement of the heart to the right, absence of movement along the right border, and moderate movement along the left side. The posterior contour of the heart was somewhat prominent. The heart shadow was extensively enclosed in shadows indicating calcification.

At operation performed under conduction anaesthesia from 8 to 10 cm. of the third to the eighth ribs were resected. Adhesions between the pericardium and the endothoracic fascia were easily loosened. After the right heart had been liberated from the chest wall and the left pleura had been pushed aside the pericardium was opened at the apex, where a free space filled with crumbling masses was found. The 6 cm. thick cicatricial covering together with its calcium deposits was dissected away from the surface of the heart, the left ventricle being liberated first and then the right ventricle and the auricles. At the end of the operation the pulse was 80. The soft parts were replaced. Puber drainage was established for twenty-four hours. Smooth convalescence resulted. The patient is now able to do light inside work, and the ascites and ascites have completely disappeared.

J VOLLMANN (Z)

Fischer, H. The Fundamental Principles of Thoracoplastic Measures for the Production of a Mechanical Effect on the Work of the Enlarged Heart (*Die Grundlagen thoracoplastischer Massnahmen zur mechanischen Beeinflussung der Arbeit des vergrösserten Herzens*). *Arch f Klin Chir*, 1929, div. 4, 112.

Following a review of the surgery of the heart Fischer states that in cardiac enlargement there is interference with the action of the heart due to

limitation of space similar to that occurring in fibrous pericarditis. He cites two cases of pronounced fibrous contracting pericarditis in which the removal of the fibrous covering only in the region of the left ventricle was sufficient to relieve the entire disturbance in the circulation, a disturbance described by Volhard as "influential stasis." With the excision of the left ventricle, the compression of the other parts of the heart, especially the left auricle, and the entire pulmonary circulation was relieved simultaneously. Fischer cites this result as evidence that the disturbance of cardiac function in fibrous pericarditis is due chiefly to displacement and compression with resulting diminution in size of those parts of the heart which have the weakest muscle, namely, the right ventricle and the still weaker auricles. In the left ventricle, which has a greater internal pressure and a considerably thicker wall, a diminution of the chamber volume is little to be feared. The author therefore believes that the condition of the heart with fibrous pericarditis is similar to that of decompensated mitral stenosis.

Other intrathoracic disease conditions act in a like manner or through a unilateral increase of pressure in the pleural space, particularly as the result of kinking of the vena cava, displacement of the heart to the left, or mechanical stimulation of the atrio-ventricular node (cardiac flutter).

Disturbances of cardiac activity in this sense result also from deformities of the bony thoracic cage caused by compression of the thorax, tumors of the chest wall, circumscribed local traumata, and surgical changing of the chest wall, and such conditions as chicken breast, funnel breast, kyphosis, scoliosis, and kyphoscoliosis. Histones and roentgenograms of illustrative cases are included in the article.

As spatial limitation is relative and depends not only upon the size of the thoracic space but also on the size of the heart itself, the decisive factor is the reciprocal relationship between the size of the organ and the thoracic capacity. Therefore when the heart is enlarged it may lack sufficient space even when the thoracic space is normal. The manner in which, under certain conditions, the enlarged heart is compelled to provide space for itself is evidenced by a number of phenomena such as changes in the thoracic wall (the "choc en dome" of the French, swinging movements in the cardiac region, displacements of the thoracic wall with every movement of the heart) and especially the formation of a costal gibbus. By means of roentgenograms it is shown that in cases of lack of space due to enlargement of the heart there is a disturbance of the relationship between the size of the heart and the thoracic capacity particularly in the sagittal diameter.

In studies of the topographical relationships of the heart in cadavers by means of a thoracic window cut on the right side, the author determined what changes in position and form of the individual parts of the heart lead to lack of room in the thorax. He found that in constriction of the enlarged heart the

sternovertebral diameter of the thorax is of special importance. If this diameter is abnormally large, signs of constriction of the heart may be absent even when the heart is greatly enlarged and a constriction of the heart between the thoracic wall and vertebral column would otherwise be demonstrable anatomically.

The results of a lack of space for the heart are functional inhibition and injury of the cardiac muscle, uselessly increased work which is lost to the circulation, limitation of filling of the heart and especially in the pumping power of the right auricle, and perhaps also disturbances in the bundle of His. The most marked changes in the position and form of the heart are demonstrable when absolute spatial constriction is superimposed upon cardiac enlargement, as is the case in extremely high elevation of the diaphragm in ileus.

Citing examples from the literature, the author expresses the opinion that constriction of an enlarged heart is amenable to surgical aid as the bony resistance of the thoracic ribs and the sternum to the heart muscle can be removed by plastic procedures on the thoracic wall. By such a procedure the enlarged heart can be protected against decompensation, and internal therapy to establish compensation of the circulation will be effectively aided.

R SYLLER (Z)

## ESOPHAGUS AND MEDIASTINUM

Mosher, H P. The Lower End of the Esophagus at Birth and in the Adult. *J Laryngol & Otol*, 1930, LV, 16r

At birth, the esophagus tapers downward to a point at the border of the left crus, where it changes its axis and proceeds between the crura from right to left toward the stomach. In many cases there is present at birth a cardiac sphincter consisting of a crescentic enlargement of the terminal muscular fibers of the esophagus. In the adult, the sphincter is more constant and easier to demonstrate.

The esophagus is subject to infection before birth as well as later, and infection plays a major rôle in cardiospasm. Ulcer of the lower end of the esophagus is rare at birth, but more common in the adult. There may be marked segmentation of the lower end of the esophagus without any pathological changes. In cardiospasm there is always a narrowing of the terminal portion of the esophagus and very frequently ulcers are present.

J DANIEL WILLEMS, M D

Seiffert, A. Operation for Carcinoma of the Esophagus by the Endoscopic Route (Operation des Oesophaguscarcinoms auf endoskopischem Wege). *Ztschr f Hals, Nasen, u Ohrenheilk*, 1919, LXXV, 585

Although carcinoma of the esophagus is usually not very malignant and does not form metastases until late, the results of operation have been very poor because exposure of the tumor by the methods



generally employed to date is difficult and dangerous. As the natural approach to the tumor is by way of the esophagus, it occurred to Siffert to attempt circular resection of the esophagus by the esophagoscopic route. He accomplished such a resection successfully in the case of a patient sixty years old who was suffering from a carcinoma in the thoracic portion of the esophagus just behind the manubrium sterni which completely closed the esophageal lumen and had been causing difficulty in swallowing for four months.

The tumor having been brought into the field of vision of the esophagoscope, novocain was injected into the periesophageal tissues. A circular incision was then made above the tumor with scissors and the neoplasm dissected free from the surrounding tissues. Because of the injection of novocain the dissection was accomplished very easily. There was very little bleeding. The tumor was removed by morcellation down to normal esophageal tissue and a rubber tube then inserted through the nose and esophagus into the stomach. Four days later the tube was removed because of the danger of decubitus ulcer of the lamina of the cricoid cartilage. After the removal of the tube the patient was able at first to take only fluids but soon was able to take soft foods. On the ninth day he was able to swallow solid food. On the fourteenth day, treatment with

bougée was begun. Today, fourteen months after the operation the patient feels perfectly well.

SALZER (Z)

Kornblum, K., and Cooper, D. A. Tuberculous Mediastinitis. *Am J Roentgenol* 1930 XLIII, 276

Mediastinal involvement in varying degree is a constant finding in all cases of pulmonary tuberculosis, but during the past few years the authors have seen five cases of mediastinal tuberculosis in which there was little or no evidence of pulmonary tuberculosis. While tuberculosis of the mediastinum is usually confined to the tracheobronchial lymph glands, the extension in the authors' cases was well beyond the lymph nodes, involving various mediastinal structures in a true mediastinitis.

Tuberculous disease involving the mediastinum is always primarily a disease of the lymphatic system. When it remains confined to the lymphatic structures the term "mediastinitis" is not justifiable.

In the cases reported, the evidence of mediastinal disease was the outstanding feature and caused considerable difficulty in the diagnosis.

The authors believe that diffuse tuberculous involvement of the mediastinum without accompanying extensive pulmonary disease is probably more common than is generally supposed.

WILLIAM F. SICKLETON, MD

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Obdalek, W. True Peritonitis In Children (Ueber die genuine Peritonitis bei Kindern) *Deutsche Zeitschr f Chir*, 1929, CCXV, 307

True, i. e., primary, peritonitis in children is not a rare condition. It furnished the indication for operation in one of thirty cases in which a laparotomy was done. Of forty-eight cases which came to operation, pneumococci were found in thirty-five, streptococci in eleven, gonococci in two, staphylococci in one, and colon bacilli in one. True peritonitis occurs most frequently in children in the second half of the pre-school age and the first half of the school age. Forty-one of fifty children with the condition were girls, and ten of the eleven cases of streptococcal infection were those of girls. The prognosis is very unfavorable. In the cases reviewed, the mortality was about 34 per cent. In cases of pneumococcal infection the prognosis is considerably better for the male than for the female, as of the six boys with this type of infection whose cases are reviewed by the author all recovered, whereas of the twenty-nine girls, eight (27 per cent) died. The greater frequency of the condition in females is probably to be ascribed to the complicated relationships of the female pelvic peritoneum.

It is probable that only gonococcal peritonitis has a genital origin. In the cases reviewed, a genital origin of the other types of infection was never determined with certainty. In only one instance was the streptococcus viridans present in both the abdominal cavity and the discharge from the genitals. The author believes that a hematogenous origin is equally improbable. From the frequent observation of marked congestion of the lower loops of the small intestine and the appendix and swelling of the mesenteric glands of the aortal ileum, he concludes that the condition is often due to the penetration of bacteria through the wall of an intestine damaged by trauma, enteritis, or some disease condition such as bronchitis, angina, or pneumonia. In nearly every case reviewed there was a mild pharyngitis or tracheitis. The lowest loops of the ileum, which have a weaker bactericidal power than the upper portions of the intestine, are especially apt to allow the penetration of the virulent contents which collect in it from higher foci of infection such as the tonsils.

True peritonitis is to be regarded as a clinical entity. Especially characteristic is its sudden onset with severe pain in the right hypogastrium or the region of the umbilicus, which ceases after two or three days even when the condition does not become walled off. Ultimately, vomiting nearly always occurs, and in all cases in which the infection is of intestinal origin there is diarrhoea. Frequently

there are symptoms of meningismus. Tenderness to pressure is most marked on the right side about the umbilicus and in the region of the appendix, a fact explained by the frequent involvement of the appendix in enteric infections. Tension of the abdominal wall is not always entirely absent, but is somewhat disproportionate to the marked tenderness of the abdominal wall to pressure. Pronounced meteorism usually sets in only with intestinal paralysis which renders the prognosis more unfavorable.

Differentiation from perityphlitic peritonitis is frequently impossible, but is aided by the sudden onset of the symptoms, the marked deterioration of the general condition in a short time, the diarrhoea and the symptoms of meningismus associated with a high leucocyte count (30,000).

Of value in differentiating the syndrome from the abdominal symptoms of pneumonia is the much less marked tenderness to pressure over the abdomen, especially during sleep.

Because of the difficulty of differentiating the condition from appendicitis, the impossibility of determining the source of the trouble (diagnosis by puncture is not done in the Bittner clinic), the uncertainty of walling off of the process, and the occasional occurrence of a fatal turn for the worse after beginning improvement, the author advocates early operation. He states that this gives better results than was previously supposed. Of five patients with diffuse pneumococcal peritonitis who were operated upon within the first twenty-four hours, only one died and this one died of a very fulminating infection before the end of twenty-four hours. Of four children operated on on the second day, three died, of seven operated upon on the third day, two died, and of those operated upon on the fourth or fifth day, none died. Of the nine patients in the abscess stage of the condition, all recovered. Apparently early operation is able in some cases to arrest the spread of pneumococcal infection. Pneumococci as well as streptococcal infections may have a relatively favorable course.

In fatal cases of primary peritonitis, autopsy discloses a picture of the most virulent sepsis with swelling of the spleen, parenchymatous degeneration, and bronchopneumonia.

Operation consists in opening the abdomen on both sides, sponging it out, draining it toward the pouch of Douglas with intercommunicating drains, and flushing it with physiological salt solution. The drains seem to hasten walling off of the process and must not be shortened or removed too soon. It is best to leave the drains and dressing in place for ten or eleven days. When complications do not develop, long persistence of fever is explained by infection of the mesenteric lymph glands. SIEVERS (Z)

**Wulsten J** Cure of Thrombosis of the Superior Mesenteric Vein by Resection of the Entire Small Intestine (*Heilung einer Thrombose der Vena mesenterica superior durch Resektion des gesamten Duendarmes*) *Zentralbl f Chir* 1929, p 3155

The author reports a case in which following manifestations of thrombophlebitis in both legs operation was performed because of the development of symptoms of ileus. Resection of 3.60 m of the small intestine was done and the jejunal stump implanted into the cæcum. After the operation pancreatic preparations were administered. When the patient was discharged as cured after ten weeks he was passing two soft stools daily. The symptoms were caused by thrombosis of the mesenteric vein.

In a review of the literature on embolism of the arteries and thrombosis of the veins Wulsten found that the most extensive resection of the intestine was done by Denk, who resected 5.40 m. A year and a half later the patient died from nutritional disorders. The normal length of the intestine ranges from 3 to 9 m. VASCULI 12 (7)

#### GASTRO-INTESTINAL TRACT

**Wanke R** Operation for Failures of Operation for Gastric Ulcer and Chronic Gastritis, Recurrent Ulcer and Gastritis in the Surgically Treated Stomach. Postoperative Adhesions and Neurosis (*Operationen chirurgische Misserfolge des Ulcus leidens und der chronischen Gastritis. Rezidivulcus und Gastritis im operierten Magen so postoperative Adhäsionen und Neurose*) *Deutsche Zeitsch f Chir* 1929 CCV 63

In a previous article by Wanke the surgical treatment of gastric and duodenal ulcer and chronic gastritis was discussed from the standpoint of the results. In this article Wanke starts out with the failures of operative treatment, the diagnosis of which was confirmed by reoperation. He states that if the operative failures are classified according to the pathological anatomical ulcer findings discovered at the first operation, it is to be concluded that the number of failures is the greater the slighter the organic changes in the stomach and duodenum at the time of the first operation. This is to be explained only by the assumption that the extent and degree of the chronic inflammatory reactive changes in the ulcer stomach are of decisive importance in the late result of surgical treatment, particularly resection.

From a tabulation of the entire number of failures reviewed it is evident that ten times as many secondary operations were done on the stomachs which showed no macroscopic changes at the time of the first operation as on those with perforated or penetrating and tumor ulcers at that time. The fewest secondary operations were done in cases in which the primary operation disclosed a perforated ulcer with very severe and extensive acute inflammatory changes or a callous penetrating ulcer (tumor or organic hour glass stomach) with very severe chronic inflammatory changes.

The nature of the operatively treated surgical failures may be classed under two diagnoses: (1) recurrent ulcer, and (2) chronic gastritis. As regards recurrent ulcer the recent study confirms the observation of the first investigation, namely that the more severe the anatomical ulcer finding in the stomach at the time of the first operation the lower the incidence of failure but the greater the probability that, if failure results, it will be manifested by recurrent ulcer. Among the seven cases operated upon secondarily following a primary operation for perforation, a recurrent ulcer was found in five (70 per cent). On the other hand it is relatively rare that a clinically diseased stomach is operated upon first for chronic gastritis and comes to secondary operation for ulcer. The recurrent ulcer, especially the recurrent ulcer developing after the most extensive radical operation, constitutes a limitation of surgical treatment of ulcer (the surgically incurable ulcer disease or the ulcer which is curable only with difficulty). The other form of the "surgically incurable ulcer disease" is the chronic irremediable gastritis of the residual gastric fundus.

The nature of the failure (recurrent ulcer and chronic gastritis) is independent of the method of operation, but the number of failures is greater after palliative operations and transverse resection than after the pylorus antrum resection of Billroth. The results of a secondary operation are successful in from 80 to 95 per cent of cases when a recurrent ulcer is the cause of the failure and when pylorus antrum resection is done. The Billroth I method is by far superior to the Billroth II method (successful results in 95 per cent as compared with 65 per cent).

In the second part of the work the author discusses chronic gastritis following operation which is usually diagnosed as postoperative adhesions, neurosis, abdominal hernia with gastric symptoms and chronic vicious circle. This is a uniform anatomical disease condition of the gastric mucous membrane, a gastritis with more or less marked perigastritis. The neurasthenia and hysteria are characteristic clinical symptoms of the gastritis. When one knows the century old conflict of internal medicine on the question of neurosis or gastritis the disease picture is readily understood.

The so called determination of the organ involved in a general neurosis in the sense of the psychoneurosis of von Bergmann is possible only when there is a local organic injury with a subsequent affective or reactive disease process.

So called postoperative adhesions are found most often after operations on the macroscopically unchanged stomach (chronic gastritis) and least often after perforated ulcers. Here again the method of operation plays an absolutely subordinate part. In order to show the relationship of chronic gastritis in the stomach that has been operated on postoperative adhesions and neurosis, the author reports in detail with roentgenograms and anatomical illustrations four of a series of fourteen cases in which clinical and anatomical studies were made. Among

these there was one case of Billroth I failure with severe chronic, incurable gastric disease in a residual gastric fundus. In order to show that in this case the severe chronic gastritis in the Billroth stomach was the cause of the disease, a section of the mucous membrane from a healed Billroth stomach is described and shown in a photomicrograph. The patient from whom the section was obtained died as a result of a suppurative adenitis and peritonitis. She was completely cured of her gastric disease for four years after resection of the ulcer by the Billroth I method. These are the first two histological studies of healed and unhealed Billroth stomachs. With the exception of two cases reported by Konjetzny, no anatomical studies of surgical failures (without recurrent ulcer) have been made previously. The Billroth I failure due to chronic gastritis is an example of "surgically incurable ulcer disease." Such cases have not been generally recognized heretofore.

Chronic gastritis in the stomach that has been operated upon is by far the most common cause of operative failure. It will not do to figure the percentage of our successful surgical results merely on the basis of the number of our surgically treated cases of recurrent ulcer. If this were done, the Kiel Clinic would show good results in 94 per cent of cases after gastro enterostomy, and in 99 per cent of cases after resection. These figures do not correspond with the actual facts. Gastritis in the stomach that has been operated upon also provides a basis for recurrent ulcer. The four cases observed in Kiel after a Billroth resection are reported briefly.

Finally, the author discusses the importance of the duration of the disease in the prognosis of surgical treatment. He states that an ulcer with a duration of the disease of less than three years should not be operated upon on the basis of a relative indication, but if the duration of the disease is more than twenty years and if a chronic callous ulcer or a penetrating ulcer is situated high up on the lesser curvature, the prognosis should be guarded even when a Billroth resection is done. As regards the late result, such cases lie in the upper limits of possible surgical success as there is usually a chronic incurable gastritis in the fundus which favors persistence of the gastric symptoms and failure. The results of secondary operation in cases of chronic gastritis in the stomach which has been operated upon are not very satisfactory. The best outlook is given by secondary pylorus antrum resection (successful results in 40 per cent of cases) if gastro enterostomy was done primarily. WANKF (Z)

Gregoire, R. Silent Perforation of a Gastric Ulcer, Free Gas and Fluid in the Abdominal Cavity Without Clinical Signs (*Ulçère gastrique perforée en silence: gaz et liquide libre dans le péritoine sans signe clinique*). *Bull. et mém. Soc. nat. de chir.*, 1930, lvi, 225.

The patient whose case is reported was a woman thirty five years of age who was seized with epigastric pain associated with hematemesis. The

clinical history had begun a year ago with a feeling of distress in the epigastrium three or four hours after meals. The patient gradually lost weight and strength. At the time of her admission to the hospital her temperature was 37 degrees C and her pulse 80. The abdomen was soft and not painful to palpation. Two days later pain began in the epigastrium, but no vomiting occurred. The abdomen was still soft. The temperature was 37.6 degrees C and the pulse 80. The patient was able to walk to the X-ray division 100 meters away from the surgical service. Fluoroscopic examination disclosed a duodenal ulcer and the presence of air in the peritoneal cavity. A diagnosis of perforation was made. Clinical examination revealed rigidity below the umbilicus, resonance over the liver, and dullness in the flanks.

An emergency operation was performed under local anesthesia. A midline incision was made above the umbilicus. Gas and liquid escaped from the peritoneal cavity. The site of the perforation was in the anterior portion of the first part of the duodenum in the center of a large indurated area. Barium was escaping from the orifice. Closure of the perforation was done in two layers and reinforced with a part of the omentum. A posterior gastro enterostomy was then performed near the pylorus, a suprapubic incision made, and a drain placed in the pouch of Douglas.

Uneventful, afebrile recovery resulted. The drain was removed on the ninth day.

Examination of the liquid in the abdominal cavity showed a few leucocytes. Cultures were sterile.

The author states that the presence of air free in the abdominal cavity is a reliable sign of perforation. Vaughn and Singer verified this observation in sixty three cases either at operation or at autopsy.

In the discussion of this report, LAURE agreed with Gregoire that the severe pain of perforation of the stomach is due, not to the perforation itself, but to the peritoneal reaction. He cited cases of acute appendicitis with perforation due to calculus or gangrene without much pain. He thinks that in the majority of cases the pain is a sign of grave peritoneal involvement rather than of perforation.

MONROE cited Hertzler's report that in operations for perforation performed under local anesthesia he had found the pain to be associated with spasm of the intestine and the accompanying escape of liquid through the perforation into the peritoneal cavity. With relaxation of the intestinal spasm, the pain diminished. Hertzler is of the opinion that the pain is of spasmodic origin, the result of the peritoneal irritation caused by the escaping liquid. The fruste forms due to covered perforations, posterior perforations are particularly treacherous. Mondor stressed the importance to the clinician of roentgen examination in these urgent cases. He stated that although it is possible to find hyperresonance on percussion in seven out of twelve cases, roentgenoscopy is more reliable than percussion.

JACOB E. KLEIN, M.D.

**La Grivinese, N.** *The Pathogenesis and Treatment of Gastro Enterocolic Fistulae* (Patogenesi e trattamento delle fistole gastroenterocoliche) *Poli clin*, Rome, 1930 xxvii, sez. chir. 66

Gastro enterocolic fistulae are caused by peptic ulcers following gastrojejunostomy. An early diagnosis is important because persons suffering from such lesions lose strength rapidly if they are not operated upon and are profoundly depressed by the fecal regurgitation from the colon.

The characteristic symptoms are *diarrhea, fecal regurgitation, fecaloid vomiting* and rapid loss of strength but when the fistula is small there may be chronic constipation from stenosis of the transverse colon. Occasionally the diarrhea is bloody. When this is the case the vomitus may contain blood. When operation is performed early it reveals only a circumscribed peritoneal reaction around the tract but when it is delayed an inflammatory tumor is formed around the tract, the efferent loop of jejunum becomes dilated and thickened and as a rule a stricture of the transverse colon is formed at the site of the fistula.

The author believes that *cecostomy* is the best operation as in the three cases in which he performed it he obtained good results. He does not advocate ileosigmoidostomy as it is more serious than cecostomy. He states that right hemicolectomy with gastropylorotomy as practiced by Pauchet facilitates the colonic stage of the operation and with treatment of the loop by the Mikulicz method is less severe than segmental resection of the transverse colon with end to end anastomosis but is nevertheless a serious operation and may be complicated by adhesions. Moreover it necessitates general anesthesia, which he regards as inadvisable in cases of fistula of the type under discussion.

ADURRY G. MORGAN, M.D.

**Mandl, F.** *Protection of Gastro Intestinal Sutures by Drains and Gauze Strips* (Ueber den Schutz von Magen Darmnahten durch Drain und Streifen) *Deutsche Zeitschr. f. Chir.* 1929 cxxix, 107

The question of drainage following suture of the gastro intestinal tract is not yet settled. Some surgeons advocate drainage whereas others claim that it endangers the suture line.

Experimental studies carried out by the author on rabbits showed that gauze strips and drains even when they are placed directly against the stomach wall, do not produce dehiscence of the incision. It is true that the foreign body substance causes variations in the process of wound healing but under normal conditions the latter do not endanger the suture line. When an insecure suture line gives way, the adhesions produced by the drainage material cause the formation of a localized abscess.

Gauze strips seem to produce more marked changes in the serosa of the stomach than rubber drains. A gauze strip should not be loosened before the sixth day and a rubber drain should not be loosened before the fourth day.

Of the last 150 resections of the stomach performed in Hochenegg's clinic, drainage was used in 35 and primary closure was done in 115. In the cases with drainage there were 9 deaths and in those with primary closure 29 deaths. The mortality was therefore about the same in both groups. Peritonitis resulting from insufficiency of the suture line was responsible for 25 (86 per cent) of the 29 deaths following primary closure and for only 6 (66 per cent) of the 9 deaths following the use of a drain. Two of the 9 deaths in the cases with drainage followed total resection of the stomach, the drainage in these cases being therefore rendered less reliable by the movements of the diaphragm.

From these results the author concludes that when the suture line has been protected by a rubber drain or gauze strips, loosening of the sutures leads not to peritonitis, but to a localized abscess.

COLINERS (Z)

**Becker, F.** *Cystic Tumors of the Intestine and Its Supporting Apparatus* (Beitrag zur Kenntnis der cystischen Tumoren des Darmes und seines Aufhangesapparates) *Schweiz. med. Wchenschr.*, 1929 ii, 9, 9, 1006

After detailed pathologico-anatomical observations and a discussion of the classification and nomenclature of cystic tumors of the intestine and its supporting tissues which admittedly are in many respects not yet entirely clear, the author reports a case observed by himself. The patient was a girl fifteen years of age who was born in a precipitate labor and had fallen to the ground from a height of about 50 cm without sustaining any external injury. Two days before her admission to the hospital she was seized suddenly with colicky pains which at first occurred throughout the abdomen but later became localized in the right hypogastrium and were associated with vomiting. On her admission to the hospital a diagnosis of appendicitis was made. Her temperature was 38.2 degrees C and her pulse 85.

Operation revealed a very abundant clear exudate with flocculi of fibrin. As a cystic mass was felt emerging from the lesser pelvis and the appendix was found negative the abdomen was opened in the midline. The cystic mass was in such close relation to the sigmoid that the intestine was lifted up by it and lay upon the dome of the tumor. Enucleation of the cyst appearing to be impossible without injury to the intestine the cyst was removed together with the affected portion of the sigmoid. Primary union followed. The pathological diagnosis was lymphangiomatous mesenteric cyst with signs of inflammation.

On the basis of the statistically collected cases of mesenteric cysts Becker reports that such cysts have been observed considerably more frequently in recent years evidently as the result of more frequent operative interventions but are still a rare finding. Because of the greater length of the mesentery of the small intestine, the absolute number of

cysts is greater in this portion of the mesentery, but to 1 meter of the mesocolon there are ten cysts, whereas to 1 meter of the mesentery of the small intestine there are only seven cysts. The distribution is about the same in the different portions of the mesocolon.

The symptoms are too varied to be of much aid alone in the diagnosis, and the clinical examination often discloses only the presence of a tumor without revealing its nature. Therefore the diagnosis can be only suspected in most of the cases. The prognosis in cases operated upon is by no means favorable, the mortality ranging from 22 to 31 per cent and in acute cases sometimes being as high as 52 per cent.

With regard to the various methods of treatment the author says that puncture not only fails to give a permanent result, but is associated with the danger of injury of the intestine and peritonitis and, in cases of echinococcus disease, with metastasis. Marsupialization gives good end results, but is associated with a protracted and not always uncomplicated course and also with the danger of peritonitis. Enucleation is the cleanest and quickest procedure, but is applicable in only from 30 to 40 per cent of the cases. In the others there remains only resection of the cyst, usually with the involved portion of the intestine, an operation which is contra indicated when the general condition is poor. For inoperable cases, the treatment is puncture and radium irradiation.

DEUS (Z)

**Valkanyi, R.** Inflammatory Volvulus of the Small Intestine and the Ileocecal Portion of the Intestine (Entzündlicher Volvulus des Dünndarmes und des Ileocecalen Darmabschnittes). *Orienteles*, 1929, XIX, 41.

The different types of volvulus are discussed from the standpoint of morphology and etiology, and eleven cases are reported from the clinic of Adam.

Case 1 was that of a woman thirty nine years of age with volvulus of the small intestine resulting from inflammation of Meckel's diverticulum. Recovery followed detorsion. Four months later strangulation of the mesentery of a twisted loop of the ileum was caused by an omental cord. Resection of the intestine was followed by recovery.

Case 2 was that of a man forty two years old with volvulus of the ascending colon from chronic appendicitis. A common ileocolic mesentery was found. Appendectomy was followed by death.

Case 3 was that of a man thirty four years of age with volvulus of the ileum due to acute appendicitis. In this case also, appendectomy was followed by death.

In Case 4, that of a boy seventeen years of age, volvulus of the small intestine resulted from acute appendicitis. Ileocolic resection was followed by recovery.

Case 5 was that of a woman twenty three years of age with volvulus of the cecum due to acute appendicitis. Appendectomy was followed by recovery.

In Case 6, that of a man fifty five years old, volvulus of the cecum resulted from acute appendicitis. Appendectomy was followed by death.

Case 7 was a case of volvulus of the ileum from chronic appendicitis. Appendectomy was followed by recovery.

Case 8 was that of a man twenty years of age with volvulus of the entire small intestine due to post-operative adhesions following appendectomy. Recovery resulted.

In Case 9, that of a man forty-nine years of age, volvulus of the ileum resulted from adhesions following a herniotomy. Intestinal resection was followed by recovery.

Case 10 was that of a woman thirty seven years of age who had a volvulus of the small intestine caused by adhesions following myomectomy. Intestinal resection resulted in recovery.

In Case 11, that of a girl seventeen years of age, volvulus of the ileum resulted from acute peritonitis due to adnexitis. Intestinal resection was followed by death.

ENDRE MAJAI (Z)

**Dubouché, H.** Biliary Ileus (A propos de l'ileus biliaire). *Bull et mém Soc nat de chir*, 1930, lvi, 205.

The author reports briefly his experience with four cases of biliary obstruction of the intestine.

In the first two cases, operation was done under general anesthesia on the basis of a diagnosis of obstruction of the small intestine. A median abdominal incision was made and the calculus causing the obstruction was extracted through an enterotomy from 12 to 15 cm above it. Death supervened rapidly from collapse.

In the third case, roentgenography showed a calculus and a diagnosis of biliary obstruction of the intestine was made. The enterotomy orifice was brought out to the intestinal wall and a drain placed in the superior loop for drainage. The patient showed improvement, but great difficulty was caused by the fistula in the small intestine, which showed no tendency to close up. The sutures separated, the surrounding skin became affected, the general condition rapidly became worse, and death ensued fifteen days later, before it was possible to re establish the continuity of the small intestine.

The fourth case was that of a woman of seventy two years. Except for emaciation, the general condition was good. The signs of obstruction of the small intestine had been present for twelve hours. The pain was at first rhythmic, but later assumed the type of the pain of the Koernig syndrome. Then the passage of stools and gas ceased, the abdomen became distended, and vomiting of intestinal matter and bile began. The general condition was as yet only slightly affected. The pulse was rapid. The abdomen was painfully distended in the region of the umbilicus. Only the small intestine was distended. There was no abdominal dullness and no fever. An intravenous injection of 20 c cm of hypertonic saline solution was administered. In a few

minutes the vomiting ceased, the pulse became slower the facies improved and the general condition became favorable for intervention. Local anesthesia preceded by scopolamine and morphine, was induced and a median incision made. At the lowest point of the dilatation a hard nodule the size of a nut was felt within the intestine. When this body was extracted through a transverse intestinal incision it was found to be a biliary calculus about 20 cm in circumference which was caught between two pieces of fecal matter. The intestine was sutured and the vicinity of the suture bathed with hypertonic saline solution. The abdominal wall was sutured in three layers without drainage. The patient made a smooth recovery and was completely cured.

In the discussion of this report SAUVE said that in his use of a 20 per cent hypertonic saline solution intravenously he has never seen any untoward reactions such as the hyperexcitability mentioned by QUENU. He has employed the solution in more than fifty cases and has seen two cases of generalized peritonitis in the terminal stage miraculously cured by it. In a case of ileus following operation for rupture of an infected dermoid cyst the occlusion developed while he was away on a vacation and on his return he found the patient in a moribund condition. After the intravenous injection of hypertonic saline solution there was marked improvement and the patient eventually made a complete recovery. However, he believes that this therapy is an emergency treatment and should be employed only in grave cases.

HARTMANN reported three cases operated upon by him. The first was that of a woman forty-four years of age who had had a series of gall stone attacks. In the last attack she developed symptoms of intestinal obstruction and fever of 38 degrees C. While the advisability of operation was being decided a calculus was removed from the rectum on examination and the patient's condition improved. The second case was that of a patient fifty years of age who had had symptoms of occlusion for five days and was in a very serious general condition. Under local anesthesia a calculus was removed from the terminal portion of the ileum. Death resulted several hours after the operation. Hartmann believes that this patient might have recovered under treatment with hypertonic saline solution but at the time he was under observation the procedure was unknown. The third case was that of a man sixty-nine years old who was habitually constipated and who had been taking pills. He presented symptoms of intestinal occlusion with fecal vomiting. At operation a biliary calculus was found in the small intestine 5 cm from the cecum. The patient made a complete recovery.

PICOT reported that he had had occasion frequently to use intravenous hypertonic saline solution and had never observed in accident such as that described by QUENU. On the contrary he has been surprised by the remarkable results obtained

in all cases of intestinal occlusion. Recently he had operated upon a woman sixty-three years of age for intestinal occlusion after unrecognized pelvic appendicitis. In this case there was an associated anuria not more than 200 c.c. of urine having been passed in the previous twenty-four hours. A fistula was made in the small intestine and hypertonic saline solution given intravenously. With each injection the general condition improved and the patient is now on the way to recovery.

ALGLAVE reported two cases of biliary obstruction of the intestine. The first was that of a woman of seventy years with intestinal obstruction of less than twenty-four hours duration. A large biliary calculus had been arrested within 1 meter of the cecum. The patient made a satisfactory recovery. The second case was that of a woman forty-five years old who had had intestinal occlusion for three days. The cause was a biliary calculus in the last portion of the ileum. Because of the poor condition of the intestinal wall a fistula was made in the small intestine. In spite of the best of care, this enlarged from day to day and infected the abdominal wall. Death resulted after two months. On the basis of his experience Alglave thinks that a fistula should be made in the small intestine only as a last resort.

PROUSS reported that he had given frequent injections of hypertonic saline solution not only for uncomplicated intestinal occlusion, but also in peritonitis with secondary obstruction and had obtained excellent results. There were no complications from the treatment.

ALVAREZ agreed with Alglave as to the serious consequences resulting from fistula of the small intestine. He stated that he had obtained good results from hypertonic saline solution and believes that QUENU's mishap may have been due to some other cause.

JACOB I. KLEIN, M.D.

#### Hahn, O. The Surgery of Duodenal Diverticula (Zur Chirurgie der Duodenaldivertikel). *Beitr. Klin. Chir.* 1929, cxliii, 235.

The author has found acceptable reports of 207 cases of duodenal diverticula in the literature. In 33 cases an operation was performed. In 33 the diverticula were demonstrated on roentgen examination, and in the rest they were demonstrated at autopsy. Hahn differentiates the following types of diverticula: (1) mucosal herniations of the shape of a glove finger protruding through an opening in the musculature usually in the neighborhood of the ampulla; (2) ulcer diverticula (or ulcer recesses) of the superior portion of the duodenum designated by Hart as pulsion diverticula; (3) diverticuloid pockets into which the common duct opens; (4) the drawing out of the duodenal wall by adhesions to inflamed adjacent organs (chiefly the gall bladder); and (5) fibrous scars usually containing a large gall stone which have come into communication with the duodenal lumen as the result of perforation.

Diverticulum of the duodenum occurs most frequently in the later years of life. Only 2 cases of

juvenile diverticula have been described. In 1 of these, the case of a sixteen year old child, death resulted from perforation of the diverticulous sac. While this is the only known fatality, duodenal diverticulum is not to be considered a harmless condition. The complications include acute inflammation of the diverticulum (such as was observed, for example, in a case operated upon by Huddy in 1923) which may lead to phlegmonous duodenitis or compression of the duodenum or the bile ducts, and chronic inflammatory changes.

As the clinical symptoms are vague, the diagnosis of duodenal diverticulum is made with difficulty. Even when the roentgen findings are positive, the gastro intestinal symptoms are not necessarily caused by the diverticulum, since of 2 cases reported by Clairmont and Schinz, operation revealed ulcer in 1 and carcinoma in the other. Great care is necessary in placing the indications for the surgical treatment of mucosal diverticula as a number of duodenal diverticula (probably hidden in pancreatic tissue) are not found at operation.

KEMP (2)

Newton, F. C., and Buckley, R. G. Primary Adenocarcinoma of the Jejunum, with a Report of Two Cases. *New England J. Med.*, 1930, cli, 205

According to statistics of European clinics and reports from 8 of the largest hospitals in the United States, only 23 primary adenocarcinomata of the jejunum have been found in 135,000 autopsies.

The first of the 2 cases reported by the authors was that of a woman fifty two years of age who was admitted to the medical service of the New Haven Hospital with the diagnosis of anemia and a three-year history of weakness, a moderate loss of weight, a slight icteric tint to the skin, and edema and tingling sensations in the lower extremities. Except for anorexia, there had been no gastro intestinal symptoms.

On physical examination the patient was found to be weak but fairly well nourished. The temperature was 99.4 degrees F., the pulse 120, and the respiration 20. The skin was slightly yellow. The heart was enlarged, and a rumbling systolic murmur was heard over the precordium. There was no abdominal distention. The lower limbs were edematous. Urinalysis was negative. The stools were negative for blood, and there was no clinical evidence of high intestinal obstruction. The hemoglobin was 15 per cent (Sahl), and the red cell count about 1,000,000 per cubic millimeter.

A blood transfusion was given, but death occurred two days after the patient entered the hospital.

Autopsy revealed an unexpected annular tumor 6 cm. in length which constricted the jejunum about 20 cm. from its beginning but did not totally obstruct it. The tumor had grown through the wall of the jejunum at its mesenteric attachment and had invaded the mesentery and adjacent lymph nodes. No metastases were found elsewhere in the body. On microscopic examination the neoplasm was found to be an adenocarcinoma.

The second case was that of a woman thirty nine years of age who was referred to the surgical service of the Peter Bent Brigham Hospital, Boston, with a history of illness beginning four months previously with a severe attack of epigastric pain which began one half hour after eating and was followed by nausea and vomiting. No blood was apparent in the vomitus or stools. The patient noted peristaltic waves passing across the upper abdomen after she had taken food, and the nausea and vomiting followed soon thereafter.

Physical examination was essentially negative, but gastro intestinal studies disclosed obstruction in the upper part of the jejunum. Twenty four hours later there was almost complete retention above the constricted portion of the bowel and reverse peristaltic waves forced the barium back into the stomach.

At exploratory laparotomy the stomach and duodenum were found to be dilated and to have thick walls. Eighteen inches below the ligament of Treitz an annular constriction of the jejunum was felt. The growth was resected together with the adjacent mesentery, and a side to side anastomosis was made. There was no evidence of involvement of adjacent lymph glands.

The patient made an uneventful recovery and was free from symptoms for four months. At the end of that time a persistent dull ache in the lower abdomen and urinary frequency developed, and a hard mass appeared in the lower part of the abdomen. A second exploratory operation revealed a large retroperitoneal mass partially filling the pelvis. The greater part of this metastatic mass was removed and the patient discharged in good condition. Following deep X ray therapy, she gained weight and no evidence of the growth could be found on pelvic or vaginal examination. After five months the pain and the tumor in the pelvis recurred. A third operation revealed partial obstruction of the colon together with acute appendicitis. Sigmoidostomy was done, with relief of the symptoms of obstruction for another short period.

Examination of the gross specimen showed that the tumor completely encircled the jejunum, leaving a lumen which admitted a probe with a diameter of about 1 mm. On microscopic examination, the neoplasm was found to be an ulcerating adenocarcinoma.

The common site of primary jejunal adenocarcinoma is in the upper portion of the jejunum. The neoplasm appears as a single, annular, constricting mass or as a metamorphosis of one or more polyps in the jejunum. The former type is the more common. The tumor usually invades all of the coats of the intestine and undermines the adjacent normal tissues. Constriction and ulceration eventually lead to occlusion of the lumen of the bowel. There are no reported cases of gross hemorrhage into the lumen of the bowel. The usual symptoms of high intestinal obstruction occur late in the life history of the tumor. As a rule, complaint is made of pains in



the upper part of the epigastrium referred to the region of the umbilicus. Secondary anaemia may be a prominent clinical finding.

The treatment consists of resection of the involved segment of bowel and the adjacent lymph nodes and mesentery. JOHN W. VULZIM, M.D.

Brodersen N. II. Caecocolic Invagination as a Complication After Appendectomy. *Acta chirurg. Scand.* 1930 lxxi 101.

The case reported was that of a man twenty-eight years of age. The appendectomy was performed during a quiescent interval between recurring attacks of appendicitis. A hyperemic swollen appendix 12 cm. long was removed and the stump invaginated. Five days after the operation the patient developed diffuse abdominal pain especially in the right lower quadrant rigidity, distention, and vomiting. Enemas returned small amounts of feces, flatus and necrotic tissue.

A second laparotomy revealed an invagination of the ileum extending well into the transverse colon. The ascending colon and caecum were very inflamed, distended and edematous. As reduction was impossible 7 cm. of the ileum, the caecum, the ascending colon and a portion of the transverse colon were removed and a side to side anastomosis of the ileum and transverse colon was done. Convalescence was uneventful.

On gross examination of the specimen the site of the appendix invagination was found to be gangrenous. The stump with its silk ligature had sloughed away.

The author concludes that the site of onset of the trouble was the invaginated stump. He believes that he may have taken too deep a suture in burying the stump, his needle catching more than peritoneum and that as a consequence the stump became polypoid and was seized and carried upward by peristalsis. CHARLES F. DUBOIS, M.D.

Reischauer F. Appendicitis and the Vegetative Nervous System. Is Ricker Right? (Appendicitis und vegetatives Nervensystem. Hat Ricker Recht?) *Beitr. z. klin. Chir.* 1929 cxlviii 283.

The author supports by very extensive clinical observations the theory of Ricker as to the neurogenic origin of appendicitis. Ricker recently advanced the view that the initial cause of appendicitis is a disturbance of circulation of nervous origin, the tissue changes resulting from this disturbance secondarily favoring the pathogenic action of bacteria present in the lumen of the appendix.

On the basis of case histories the author analyzes the prodromal symptoms of the appendicitis attack and comes to the conclusion that they may be interpreted in accordance with the neurogenic theory. He believes that the diffuse pain in the gastric and intestinal regions and the vomiting which occur in the beginning of the appendicitis attack are not the result of beginning peritoneal irritation as is generally assumed but are manifestations of a neurovege-

tative gastric crisis originating in the coeliac ganglion by which the catastrophic circulatory disturbance in the appendix is produced. The localization of the pain in the right hypogastrium occurs much later at a time when the abdominal pain and initial vomiting have ceased. The explanation of the localization of this secondary phenomenon of the crisis in the appendix is to be found in the peculiar character of the appendix as the blind organ of the gastro intestinal tract and in the richness of its walls in lymphoid tissue.

Among other clinical phenomena interpreted in accordance with the theory of the neurogenic origin of appendicitis are the resemblance of the initial symptoms of appendicitis to those of acute gastro intestinal dilatation which is likewise regarded as the result of a nervous irritation arising from the coeliac ganglion and the frequent coexistence of appendicitis and gastric ulcer. According to the theory of von Bergmann, the latter condition also begins as a neurogenic disturbance of the circulation. In the case of the stomach the damaged tissue is destroyed by the peptic action of the gastric contents whereas in the case of the appendix, it is destroyed by the infectious intestinal flora.

Further proofs of the neurogenic origin of appendicitis in the author's opinion are the greater frequency of the condition, as also of gastric ulcer, in youth than in later life and in civilized races than in uncivilized races. In almost all cases of chronic appendicitis a positive Chvostek sign was found. The author interprets the frequency of this sign in appendicitis as an indication of abnormal tendencies of the vegetative nervous system constituting the basis of the attack. CORRAZIS (Z).

Delore Y. Surgical Treatment of Sigmoiditis and Its Results (A propos du traitement chirurgical des sigmoidites et de ses résultats). *Rev. de chir.* Par. 1929 xlviii 597.

The author reports seven cases of sigmoiditis which he divides into three groups: (1) gangrenous sigmoiditis, (2) sigmoiditis with perisigmoid abscess and (3) chronic sigmoiditis without abscess. The results show that a uniform treatment cannot be applied to all cases. In one case a cure was effected by simple colostomy but in another it required resection with colostomy, and in a third, castration and caecostomy. Two patients developed a recurrence in spite of salpingectomy and colostomy and required a secondary resection both were suffering from diverticulitis. One patient was cured by drainage and colostomy, and another developed a recurrence after an abscess had been opened and a colostomy had been done. In spite of the great diversity in the treatments, the author concludes as follows:

In the acute gangrenous forms the treatment should usually be limited to drainage with the formation of an artificial anus of the caecum or colon, resection will rarely be practicable. In sigmoiditis with abscess the abscess should be merely incised and drained at first. However simple incision often

proves insufficient, particularly if there is a diverticulitis, and secondary resection becomes necessary. An artificial anus should always be formed beforehand. Chronic sigmoiditis may be cured by medical treatment. Recovery can be hastened by colostomy. When diverticulitis is present, resection is the procedure of choice and should be preceded or accompanied by colostomy. If the sigmoiditis is associated with salpingitis, the salpingitis should be treated first. If the sigmoiditis is uncomplicated, it may be cured by medical treatment, but if it is accompanied by diverticulitis, immediate or secondary resection of the affected part of the sigmoid with the establishment of an artificial anus is generally necessary.

AUDREY G. MORGAN, M.D.

Demel, R., and Adamek, G. A Critical Consideration of the Treatment of Rectal Prolapse (Zur kritischen Beleuchtung der Behandlung des Mastdarmprolapses) *Deutsche Ztschr. f. Chir.*, 1929, CCXX 355

The experience of the von Eiselsberg clinic and the reports in the literature indicate that anal prolapse in children can usually be cured by conservative measures (reposition and adhesive plaster strapping). In rectal prolapse in children, Thiersch's ring of silver wire has proved of value. For anal prolapse in adults, the authors recommend excision of the prolapsed anal mucosa (Langenbeck). In rectal prolapse in adults, methods of fixing the rectum to the yielding neighboring structures are usually unsuccessful. The operative formation of a pelvic floor capable of affording adequate support can give lasting results only if the pelvic floor was previously weakened by trauma. Aus rotation of the gut (Gersuny) is not without danger. Paraffin injections have been abandoned almost everywhere. Resection methods are not satisfactory as they combat only the result and not the cause of the condition. In irreducible, incarcerated, or ulcerated prolapse, amputation of the prolapse is indicated. For large rectal prolapses, combined operative methods are preferable.

Finally, the authors describe a new method of operative treatment and report four cases in which it was used. The procedure is carried out in two stages. In the first stage the patient is placed in the Trendelenburg position and through a median abdominal incision a new diaphragm is made beneath the linea umbinata by sewing together the parietal pelvic peritoneum of the right and left sides. Hofman's pelvic floor plastic operation is then performed by the sacral route. In the second stage, three or four weeks later, the prolapsed rectum is amputated by the Mikulicz method. WERNER BLOCK (Z)

Mandl, F. One Thousand Sacral Extirpations of the Rectum for Carcinoma (Ueber 1000 sacrale Mastdarmkrebsextirpationen aus dem Hocheneggischen Material) *Deutsche Ztschr. f. Chir.*, 1929, CCXX, 3

Mandl discusses the questions concerned in the technique of operations on the rectum for carcinoma

In 984 cases in which a sacral operation was performed there were 115 deaths, a mortality of 11.6 per cent. Pulmonary complications accounted for from 10 to 15 per cent of the deaths, and wound infection and peritonitis for 45 per cent. The peritonitis usually had its origin in the pouch of Douglas. The occurrence of wound infection depends rather on the virulence of the organisms than on the time at which the wound becomes contaminated with feces. In the prevention of wound infection a preliminary colostomy is of aid. Gangrene occurs most frequently when the pulling through process is carried out forcibly. This procedure is used in only 24 per cent of cases in which resection is done. The bowel should never be pulled down tightly enough to obliterate the folds in the serosa (Hochenegg). Frequently, prolapse of the small intestine occurs through gaps between the sutures in the pouch of Douglas. To relieve the load on the pouch of Douglas the patient should be placed in the Trendelenburg position after the operation. Spinal anesthesia should be used more frequently than in the past.

Of 700 sacral operations, 30 per cent gave successful results lasting for more than five years. Two patients who were operated upon at the ages of twenty nine and twenty-eight years are now well at the ages of forty-four and forty-eight years. Eight late recurrences after nine, ten, and fifteen years are recorded. When no recurrences develop during the first few years after the operation, the incidence of permanent cure is increased to 85 per cent.

The significance of polyps as emphasized by Schmieden is confirmed. Preservation of the sphincter does not influence the final result. The radicalness of the operation depends on the removal of not only a long segment of intestine, but also of the greatest possible amount of tissue around the tumor. The technique is described. The author disapproves of the combined operation as he believes it is too dangerous. For relief of the pain associated with recurrence, he recommends epidural or paravertebral injections. A. W. FISCHER (Z)

#### LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Bassin, A. L., and Whitaker, L. R. Pharmacodynamic Effects upon the Gall Bladder. *New England J. Med.*, 1930, CCXI, 311

The effect of drugs upon the emptying of the gall bladders of cats was determined by cholecystography after the animals had recovered from an operation in which iodized oil was injected into the gall bladder. Olive oil emulsion and egg yolk given intravenously produced more marked expulsion of the contents of the gall bladder than any other substances. The most constant and effective means of emptying the gall bladder was the administration of fats in emulsion, either by mouth or intravenously. The authors were able to empty the vesicle even in animals anesthetized with barbital or under light ether anesthesia. Cholecystokin produced rapid and

vigorous momentary expulsion of the gall bladder contents. Calomel and magnesium sulphate administered by stomach tube had no effect and magnesium sulphate given intramuscularly produced only slight activity. Ergotamine caused slight emptying of the gall bladder in some experiments but physostigmine not only failed to produce emptying but stopped the process after it had started. Atropin ordinarily inhibited emptying but in one case the gall bladder emptied in spite of it.

SAMUEL J. FOGLISON, M.D.

**Finsterer H.** The Importance of External Cholelithochoduodenostomy in the Treatment of Gall Stone Disease (Die Bedeutung der Cholelithochoduodenostomia externa fuer die Behandlung des Gallensteinleidens). *Arch f klin Chir* 1929 clvi 417.

The author begins his article with a review of the various causes which may produce symptoms after operations for gall stones and render the prognosis of surgical treatment less favorable. One important essential for rapid and certain recovery in all affections of the gall bladder and common duct is the continuous and unobstructed flow of bile. Obstruction not only favors infection of the deeper bile tracts but may lead to secondary stone formation in the gall bladder and the common and hepatic ducts with all of its sequelae. External drainage of bile by hepatic duct drainage cannot be continued long as it is poorly tolerated. The author advises against mechanical dilatation of the papilla because of a certain immediate danger but especially because of the secondary stenosis. He disapproves of the introduction of a rubber drain into the dilated papilla because of the danger of pancreatitis and the possibility of incrustation of the drainage tube which may favor the recurrence of stones. Internal splitting of the papilla may lead to cicatricial stenosis.

As compared with the methods mentioned the formation of a new communication between the common duct and the duodenum offers certain advantages. Such an anastomosis may be made with either the retroduodenal or the supraduodenal portion of the common duct. The retroduodenal segment may be opened by the transduodenal route and the anastomosis made by suturing the mucosa of the duodenum to that of the common duct as in the internal cholelithochoduodenostomy described by Kocher. However this procedure has been replaced by the external cholelithochoduodenostomy recommended by Sasse which may be done also in cholangitis and inflammatory stenosis without complete obstruction of the papilla such as occurs in carcinoma.

The indications for external cholelithochoduodenostomy are (1) the presence of numerous stones in the common and hepatic ducts, (2) cholangitis and (3) high grade dilatation of the common and hepatic ducts from biliary stasis caused by relative stenosis of the papilla due to incrustation or chronic pancreatitis.

The author has done the operation forty five times. Seven of the patients were under forty years of age, twelve over sixty years and four over seventy years. In many of the cases the condition was extremely severe and of long duration. The results obtained were considered good. The total mortality was 4.8 per cent. There were no failures. For the prevention of fatalities very careful drainage of the abdominal cavity is essential.

BOOK (Z)

**Ginzburg L.** and Benjamin, E. W. Lipiodol Studies of Postoperative Biliary Fistulae. *Ann Surg* 1930, xci 233.

The injection of lipiodol constitutes a safe and simple method for the study of postoperative biliary fistulae in the absence of active infection involving the duct system. The injections are best made under fluoroscopic control.

Biliary fistulae which show no evidence of obstruction in the extrahepatic duct system close spontaneously. In the absence of obstruction distal to the internal opening of the fistulous tract, the lipiodol appears almost immediately in the duodenum and there is no reversal of flow into the intrahepatic biliary radicle. The presence of obstruction will prevent the lipiodol from entering the duodenum immediately and if sufficient lipiodol is used will result in a reversal of its flow.

When the stools contain bile, lipiodol may demonstrate the presence of incomplete obstruction. Such fistulae may close spontaneously but the encroachment upon the lumen will probably give rise to symptoms in the future.

The nature of the obstruction must be determined by inference. Obstruction in the hepatic or supraduodenal portion of the common duct is likely to be due to stricture whereas obstruction near the papilla is more likely to be due to stone. The presence of a stone will not necessarily cause a filling defect in the lipiodol shadow.

Routine examination of biliary fistulae lasting longer than two or three weeks may result in earlier diagnosis of strictures of the ducts.

In the greatly dilated common duct frequently found a few years after cholecystectomy there may be a marked delay in the passage of the lipiodol into the duodenum without the presence of obstruction.

In cases of complete biliary fistulae lipiodol studies may help to indicate the most feasible reconstructive procedure.

SAMUEL KAHN, M.D.

**O'Leary J. L.** An Experimental Study of the Islet Cells of the Pancreas in vivo. *Anat Record* 1930 clv 27.

The author reports studies of the secretory process in the islet cells of the pancreas which he carried out to obtain information regarding the appearance and disappearance of specific granules and other microscopically demonstrable elements of the normal living cells; the reaction to vital dyes and the behavior of the cells during the compensation necessary in altered carbohydrate metabolism in response to

agents calculated to accelerate secretion. His experimental animals were white mice. His observations support Bensley's original description of a canalicular apparatus in fresh isolated cells of the guinea pig.

The canalicular system of the islet cells did not segregate the dye neutral red when it was applied intravitaly by appropriate methods. Janus Green B successfully stained the mitochondria of living islet and acinar cells. In response to the introduction of dextrose, large vacuoles were observed to form in the region of the islet cell lodging the canalicular apparatus and to migrate to the periphery of the cells next to the capillary where they were diminished in volume, presumably by diffusion of their contents through the cell membrane. This phenomenon was never observed during the control observation and is thought to constitute the mechanism of insulin secretion. Specific granules or other cytoplasmic inclusions were not removed from islet cells following the introduction of dextrose. Pilocarpine was unsuccessfully used to influence the formation of secretory vacuoles in these cells.

JACOB M. MORA, M.D.

Krekelier, A. Haemorrhagic Cysts of the Spleen (Ueber Blutungscysten der Milz). *Arch. f. path. Anat.*, 1929, cclxv, 60.

True large splenic cysts develop from the small Fowler infestation, dilatation, and neoplastic cysts. False large cysts are described as hemorrhagic and degenerative cysts, although the latter form still lacks proof.

With a description of two of his own cases of beginning cystic degeneration of hemorrhagic areas and of typical hemorrhagic cysts of the spleen, the author reviews thirty-three cases of false hemorrhagic cysts reported in the literature. Six of the latter were similar to his own as regards the history and the clinical and microscopic findings. In eight other cases no history of violence was given but there was another causative factor such as malaria, birth trauma, atherosclerosis, or myocardial degeneration. Fifteen cases presented a history of violence and also other factors which did not exclude secondary hemorrhage. In four cases the presence of a hemorrhagic cyst was probable, but could not be definitely proved. Twenty of the thirty-three patients were females. The ages ranged from eight to forty-seven years.

The essential characteristic is the cyst wall which consists of a collagenous connective tissue capsule poor in elastic fibers and free from epithelial cells. Outside of it is a trabecular layer of splenic tissue (heaped up splenic tissue layers and copious blood pigment). From the trabecular layer there are processes projecting into the cyst capsule which push the latter in front of them so that, on the inside, there are ridges and projections. The nature of the lining of the cyst is not decisive between true and false cysts. No endothelial layer was demonstrated in the reported cases and in true cysts the

disappearance of such a layer may be caused by increased internal pressure. The lumen contains from 0.1 to 10 liters of fluid composed of the products of the various stages of degeneration.

J. VOLLMANN (Z.)

## MISCELLANEOUS

Loehr, W. The Importance of Anaerobic Bacilli as Agents of Infection of the Abdominal Organs, Particularly in the Abdominal Cavity of the Adult (Die Bedeutung der anaeroben Bacillen als Infektionserreger in den Bauchorganen, insbesondere in der Bauchhöhle beim erwachsenen Menschen). *Ergebn. d. Hyg.*, 1929, v, 488.

Incident to operation, the author examined a series of stomachs affected with ulcer, gastritis, and carcinoma and over 100 phlegmonous and gangrenous appendices for the presence of anaerobes. He states that, in the stomach, the Fraenkel gas bacillus does not come into consideration as a pathogenic agent, particularly not as the causative agent of gas phlegmon. Moreover, other anaerobes, such as Novy's bacillus of malignant oedema, bacillus chauvæi, and the tetanus bacillus were not found in the stomach in his studies.

Experiments on animals showed that, even in large doses, the intraperitoneal introduction of toxin free spores of the recognized highly pathogenic microorganisms causing gas oedema and the pure toxin formers did not produce infection from within the peritoneal cavity. Although the highly virulent toxin of bacillus botulinus is able to pass through the wall of the gastro-intestinal tract without being destroyed, the experiments showed that the bacillus botulinus cannot grow or form its toxin in the stomach and that large quantities of the spores in the free abdominal cavity are unable to mature. Toxin free spores of tetanus bacilli are also destroyed in the free abdominal cavity in spite of their indestructible toxicity.

In late peritonitis following the perforation of a gastric ulcer the antiperistaltic ascent of colon flora brings many anaerobes into the stomach, but the rich blood supply of the stomach and peritoneum protects these organs from infection by the spores of all anaerobic bacteria causing gas oedema and from gaseous decomposition.

Although anaerobes are entirely absent in the stomach, they are often to be found in large numbers in the intestinal canal, especially the Fraenkel gas bacillus. In the uppermost portion of the small bowel, however, they may be as infrequent as in the stomach. In perforations of the lower portions of the small bowel and of any part of the colon, gas bacillus infection of the peritoneum must always be considered. Tetanus bacilli have been found in the colon, but a true tetanus of the gastro-intestinal tract has never been observed. The intestinal juices are to be regarded the essential detoxicating agents against the tetanus toxin. In 2 cases of secretory and functional disturbances associated with peritonitis

and in 2 cases of ileus many Welch Fraenkel bacilli were found in the gastric contents. In an early case of ileus they could not be demonstrated. In a case of strangulation ileus of several days' duration (with out perforation or clinical signs of peritonitis), Welch Fraenkel gas bacilli, bacillus putrificus verrucosus and enterococci were found in the serous content of the abdominal cavity.

Bacteriological demonstration of gas infection of the liver has never been made although Welch Fraenkel bacilli have been found repeatedly in the gall bladder in cholecystitis.

Bacteriological examinations of the flora of the normal or diseased appendix are incomplete unless anaerobic bacteria are considered. Anaerobes including the Fraenkel gas bacillus, the Novy bacillus of malignant oedema, and the bacillus chauvæi may be demonstrated in the normal as well as the pathological appendix. Of the abdominal forms of gas gangrene only that of the uterus may be compared with gas gangrene of the extremities. It gives rise by the lymphatic route to a gas gangrene peritonitis without a simultaneous phlebotomy.

The effect of pure cultures of selected pathogenic anaerobic strains was studied experimentally on the peritoneum of guinea pigs. It was always possible to produce typical gas oedema by subcutaneous or intramuscular injection, but the fatal peritoneal infection obtained with the same culture always pursued its course without gas formation and with a more or less marked hæmorrhagic exudation in the abdominal cavity and gastro intestinal atony. It was found also that a larger dose was survived when the culture was given intraperitoneally than when it was given subcutaneously or intramuscularly. When a sufficiently large quantity of the toxin reaches the peritoneal cavity the first stage of intoxication of the abdominal organs is manifested by a vascular distention and permeability with resulting marked exudation. Experiments on animals carried out with the Novy bacillus of malignant oedema and the bacillus chauvæi gave results identical with those obtained with the Welch Fraenkel bacillus. The toxin of cultures of tetanus bacillus killed the animals when it was injected intraperitoneally as well as when it was injected intramuscularly, but if the toxin was previously washed out the bacilli had no dangerous effect. The same results were obtained with bacillus botulinus.

Also in experiments with mixed cultures (Fraenkel bacilli with bacillus amylobacter or bacillus putrificus verrucosus) intraperitoneal injections were better withstood. An increase in the toxic action of mixed infections with the bacilli mentioned could not be demonstrated in the experiments, but the addition of bacillus tetani increased the toxicity enormously. Similarly the course was extraordinarily severe after infection with a mixture of bacillus chauvæi and bacillus tetani. The bacillus putrificus tetani alone was always found non pathogenic in the experiments on animals. On infection of the abdominal cavity with bacillus tetani there were no patho-

logical findings in the peritoneal cavity—neither exudate nor gastro intestinal distention. The animals all died of central paralysis.

In all cases the toxic action of the anaerobes was more severe and more rapid than that of the aerobes. There is no gas oedema of the intestinal tract and no diffuse anaerobic peritonitis with gas formation. In the abdominal cavity as elsewhere the micro-organisms responsible for gas oedema first attack the peripheral vascular apparatus. The exudation in the abdominal cavity precedes the intestinal paralysis. The toxin which leads to exudation in the abdominal cavity renders the gastro intestinal tract and the viscera yielding and flaccid, but does not cause them to undergo necrosis such as occurs in gas gangrene of the muscles. The effect of the infection is an enormous loss of fluid with weakening and intoxication of the organism as a whole and anaemia of the central vital centers due to emptying of the vessels. Besides radical removal of the focus of infection the use of a specific curative serum seems most urgent.

BERGEMANN (7)

Patey, D. H. The Effect of Abdominal Operations on the Mechanism of Respiration with Special Reference to Pulmonary Embolism and Massive Collapse of the Lungs. *Brit J Surg*, 1930, xiv, 487.

Pulmonary embolism and thrombosis, as well as inflammatory processes and collapse of the lung more frequently follow abdominal operations than operations on other parts of the body. Of 54,233 operations performed in 31 of the largest London hospitals during 1926-30 were followed by fatal pulmonary embolism, and of the latter, 43 were laparotomies. Of 23 cases of postoperative pulmonary embolism which occurred in the period from 1923 to 1926 in the Middlesex Hospital, 20 followed an abdominal operation.

After a laparotomy, the patient usually experiences pain in the region of the wound upon deep inspiration or expiration. The author found that following an abdominal section the vital capacity was invariably decreased whereas following operation for a non abdominal condition it was not changed. In 16 cases in which he investigated the tidal air after an abdominal operation he found it decreased in 10 cases and increased in 4. In 2, there was practically no alteration. Of a control group of 7 cases of non abdominal conditions the tidal air was increased after operation in 6 cases and decreased in 1 case.

In order to determine the effect of abdominal operations on the movements of the diaphragm, roentgenograms were made with a portable apparatus. A roentgenogram was made during inspiration and during expiration before operation and again two days after operation. In 7 cases so examined the respiratory excursions of the diaphragm were diminished. Of 4 control cases in which a radical operation for carcinoma of the breast had been performed the diaphragmatic excursion was not altered in 3 and was only slightly limited in 1. It was found that

attempts at deep breathing and carbon dioxide inhalation produced relatively little change in the post operative excursion of the diaphragm.

The percentage of carbon dioxide in the alveolar air was found to be less after operation than before operation. The author attributes the decrease to the fact that after operation expiration is less complete and the carbon dioxide exhaled is diluted by the air within the trachea and larynx. The diminution in expiration is due to the abdominal incision which causes pain when the abdominal muscles contract.

The variations in intra abdominal respiratory pressure were determined by introducing a balloon into the rectum and connecting it by means of tubes to a tambour writing on a drum. Before operation, it was found that in patients breathing quietly there was a rise in the intra abdominal pressure during inspiration and a fall during expiration. In patients breathing deeply, the curve was similar except that at the end of expiration there was a slight and temporary rise in the pressure. After operation, the

curve became less regular, the undulations of quiet respiration were diminished, the amplification on deep breathing was much less than before operation, and any secondary curve of late expiration which may have been present before operation disappeared or was greatly diminished.

The normal respiratory variations of intra abdominal pressure possibly play some role in aiding the return of blood from the inferior vena cava and may be simulated by abdominal massage in which pressure is applied to the abdomen during inspiration, when the intrathoracic pressure is lowered. As a result of his experimental work, the author believes that the slowing of the blood stream after operation, especially within the abdomen, and the limitation of movement at the bases of the lungs are responsible for postoperative complications. He therefore emphasizes the importance of combating abdominal distension after operation because of its effect on the diaphragm, and advocates splinting of the injured abdominal musculature. ALTON OCHSNER, M.D.

# GYNECOLOGY

## UTERUS

Vincent R. and Monod, O. A Study of the Bacterial Flora in Epithelioma of the Cervix Its Importance in Irradiation Therapy (Étude de la flore microbienne des épithéliomas du col utérin son importance pour la radiothérapie) *Gyné et obst.* 1929 xx 709

From the Radium Institute of Paris the authors report studies made during 1926 and 1927 of the bacterial flora in 116 cases of cancer of the uterus in which an elevation of the temperature beyond 38 degrees C occurred during irradiation treatment. Uterovaginal secretion collected with a pipette was examined in the fresh state for spirilla and spirochaetae; gram staining was done and cultures were made for aerobes and anaerobes. Following significant elevations of the temperature blood cultures were made in addition.

The bacteria before treatment were abundant. The micro organisms found most often were hemolytic streptococci, Friedländer's bacillus, diphtheroid bacilli, and staphylococci. In putrid infections there were many vibrios and fusiform bacilli.

In general the infection increased during treatment. New organisms appeared or those already present, particularly the hemolytic streptococci, became more virulent. Of 28 cases with infectious complications among which there were 7 peritoneal abscesses the streptococcus hemolyticus was found in 15. Blood cultures were always negative.

An attempt was made to immunize against streptococci by auto vaccination before treatment, but this was abandoned when 5 of the 13 patients vaccinated showed increasing elevations of temperature during irradiation. One of the 5 developed a peritoneal abscess and another died of peritonitis.

Besredka's anti streptococcus vaccine was used in 5 cases but in 3 of them the temperature continued to rise.

The authors conclude that infections occurring during the irradiation treatment of carcinoma of the uterus are not caused by any single bacterium. As the streptococcus is the micro organism most frequently found they believe that in spite of their failure attempts to immunize against it should be continued. C. D. HAAGEN EN MD

Fuerst, W. Studies of the Dosage of Hard Roentgen Rays with a Long Focus Skin Distance in the Treatment of Carcinoma of the Cervix (Untersuchungen ueber die Dosierung harter Roentgenstrahlung aus Fernfeldern bei der Behandlung des Collumcarcinoms). *Strahlentherapie* 19 9, xxviii 601-xxviii 340, 1931

Fuerst describes the postoperative roentgen treatment of carcinoma of the uterus at the Walthard

Clinic. In taking over the clinic at Zurich, Walthard assumed as his chief task the introduction of his own methods of treatment which are based on his experience at Frankfurt and on the results reported by Bumm of Berlin, Schweitzer of Leipzig and Franz of Berlin.

In a group of 66 cases treated by Franz only by operation the incidence of permanent cure was 56.05 per cent, and in a group of 308 similarly treated cases it was 45.8 per cent. On the basis of these figures Walthard chose as his method primary operation followed by roentgen irradiation. He prefers roentgen irradiation to radium irradiation because the results obtained in his clinic from radium treatment (Eckelt) were not sufficiently encouraging to warrant the use of radium irradiation instead of operation. Moreover, he cites the fact that a permanent cure was obtained with radium by Regaud in only 12.5 per cent of cases, by Lohm in only 15.5 per cent, and by Heymann, in only 20.2 per cent.

Fuerst has developed a method of roentgen irradiation of his own which differs from the methods used by other gynecologists. He employs extremely hard rays with maximal filtration and a relatively weak current. Up to the present time this method has not won many adherents among German gynecologists but Hoffeldt, the roentgenologist is now interested in it. The Zurich clinic has opened up a new field of gynecological roentgenology and is obtaining excellent results.

A covering layer of paraffin used by Fue at first did not yield satisfactory results and was therefore given up. Fuerst chooses an average focus skin distance of 1 meter. With his irradiation apparatus in which 2 tubes are used simultaneously (1 tube above and 1 tube beneath the table), the time of exposure is reduced by half. The transformer tension of 200 kv. gives a tension of approximately 190 kv. in the tubes. Since, with a focus skin distance of 30 cm. the skin erythema dosage is obtained in ninety minutes it might be assumed that with the longer distance this dosage would be obtained in one thousand minutes (sixteen and six tenths hours). As a matter of fact, however, the reaction corresponding to the skin erythema dosage is reached with the longer distance only after irradiation for seventeen hundred and seventy seven minutes (twenty nine and six tenths hours). Therefore when the focus skin distance is increased to 1 meter a correction of 60 per cent in either the intensity or the period of exposure must be added to obtain the same biological phenomenon. If the heating current to the tube is increased to 3 ma., or 4 times the original value the fall of the tension from the transformer to the tube is greater the more

the current is increased so that the period of exposure is shortened by only 20 per cent. In highly filtered irradiation at a distance of 1 meter, extraordinarily high dosages are tolerated. "It is possible, without injury, to repeat, after a short interval, a series of exposures which have already produced a marked erythema. With the diaphragm close up beneath the tube, the erythema which develops is most marked in the center and fades out so rapidly toward the periphery that it is no longer visible at the edge of the field or where 2 fields overlap."

Highly filtered irradiation with a single tube or with 2 tubes (1 tube above and 1 tube beneath the table) at a focus-distance of 60 cm. produces different degrees of skin erythema. When the 2 tube method is used the skin reaction begins to be much more noticeable about three weeks after the exposure and the borders of the field are more distinct than when the single tube method is used. The stronger reaction produced by the 2 tube method is to be ascribed to the effect of the rays coming through the body from the other side. In order to obtain a skin erythema equal to that produced when the focus-skin distance is only 30 cm., it is necessary to add 23 per cent to the increased time of exposure calculated from the formula based on the square of the distance. The desired degree of erythema will then be obtained only in fields measuring 18 by 24 cm. In fields measuring 9 by 24 cm. an even greater additional dosage is required.

With the use of hard roentgen rays at the long focus-skin distance and 2 tubes the highest dosage for the skin does not correspond to the highest dosage for the deeper tissues and therefore does not correspond to the highest dosage for carcinoma of the cervix. The highest dosage for the deeper tissues and for the organism as a whole is always lower than the highest dosage for the skin. Before each exposure a blood examination should be made in order to obtain data from which it may be determined later whether and when further treatment should be instituted.

In the third part of this report the author discusses attempts made to determine by technical measurements the values which he had already determined by empirical methods, in order that they may be reproduced experimentally and it may be possible to determine the proper dosage for a given case. He found that skin erythema is of only secondary importance in exposure to the hard rays at a long focus-skin distance. As a clearly visible skin erythema is not developed as a rule under such an exposure, the danger of causing injury to the deeper tissues before the appearance of the erythema must be kept in mind. The injuries so produced may occur in the form of infiltrations of the pelvic connective tissue and may not be manifested by the well known symptoms of overdosage of the bladder and intestines. To estimate the general bodily resistance it is especially important to watch the effect of the treatment on the blood.

P. SCHWARTZ (G.)

#### Rullé P. Unusual Late Sequelæ of Radium Therapy (Un cas rare de séquelles tardives après radiothérapie). *Gynec. et obs.* 1922, 25, 7-2.

In the case reported that of a woman fifty six years of age, an inoperable carcinoma of the cervix was treated with 25 mgm. of mesothorium filtered with brass (thickness of filter not stated). In January and February 1921 4,800 mgm.-hrs were given in eight treatments. In May and June 1921, 2,400 mgm.-hrs. in four treatments, and in October, 1921, two final treatments (dosage not stated).

In November 1921 the patient suffered pain in the rectum and passed bloody stools for a short time. In September 1923, she passed fecal matter by vagina but the fistula between the colon and vagina closed spontaneously to such an extent that in 1924 defecation occurred only by rectum although gas still escaped by way of the vagina. In December 1927 the patient began to pass urine by way of the vagina. Examination revealed marked fibrosis of the vagina and parametrium. The cervix could not be felt. The corpus was atrophied. Recto-vaginal and vesicovaginal fistula were found. No carcinoma remained. C. D. HALL, JR., M.D.

#### Bonney, V. The Surgical Treatment of Carcinoma of the Cervix. *Lancet*, 1930, *cxxxv*, 277.

The author discusses the results of the Wertheim operation in carcinoma of the cervix. Prior to 1925, he performed this operation 284 times. Forty-seven (16.5 per cent) of the patients died as the result of the operation; 107 developed a recurrence before the end of five years, 12 could not be traced later, 8 died of other diseases before the end of five years, and 110 (38.7 per cent) were well at the end of five years. The percentage incidence of five-year cure is based on the assumption that the 12 patients who could not be traced and the 8 who died of other diseases had carcinoma.

Bonney emphasizes that survival for five years after the operation cannot be considered absolute proof of cure since about 10 per cent of recurrences develop between the fifth and tenth years. Of 181 patients operated upon more than ten years ago, 31 (17.1 per cent) died as the result of the operation, 67 developed a recurrence before ten years, 19 could not be traced later, 9 died of other diseases before the end of ten years, and 55 (30.3 per cent) were alive at the end of ten years. In this instance also the percentage incidence of cure is based on the assumption that the patients who could not be traced and those who died of other diseases before the end of ten years had carcinoma.

With regard to the operative deaths the author says that the severity of the operation itself is less a factor than the patient's general condition and the condition of the area involved by the growth. A large percentage of women with cancer of the cervix are in poor health regardless of the cancer and Bonney believes that few women develop cervical cancer until their general condition has considerably deteriorated as the result of other causes.



The local condition is important because the majority of cancers of the cervix being heavily infected by the time advice is sought, the risk of post operative infection of the area involved is present even when the utmost precautions are taken.

Since the author has been performing the Wertheim operation the mortality in his cases has steadily decreased from 20 per cent in his first 100 operations to 8 per cent in the last group. He attributes the decrease to small improvements in the technique and "utilized experience." His technique is practically the standard procedure.

About 68 per cent of recurrences develop before the end of the second year, and about 90 per cent before the end of the fifth year. Secondary growths are rarely susceptible to further operative treatment.

Bonney is not at all enthusiastic regarding X ray or radium irradiation as an adjunct either before or after surgical care. All of his patients died who were irradiated postoperatively for secondary growths, and of those who were irradiated pre operatively with a view to rendering the growth operable none survived for five years. CHARLES F. DUBOIS, M.D.

**D Erchia F.** The Combination of Irradiation and the Wertheim Operation with Ligation of the Internal Iliac Arteries in the Treatment of Carcinoma of the Cervix. (Cure fische ed operazione di Wertheim con allacciatura delle arterie iliache interne nel carcinoma del collo dell'utero). *Clin. ostet.*, 1929, LVII, 653.

The author believes that since the results of all methods of treating of carcinoma of the cervix have not been very satisfactory an attempt should be made to improve the percentage of cures by resorting to the Wertheim operation with ligation of the internal iliac arteries and pre operative or post operative irradiation.

In the period from 1912 to 1914, d Erchia extended his limits of operability to the utmost. In a series of forty Wertheim operations in sixteen of which he ligated the internal iliac arteries the immediate operative mortality was to 2 per cent. Three of the advanced cases are reported in detail. In spite of extensive parametrial involvement the three patients survived for thirteen, fifteen and eighteen months respectively. No irradiation was given. C. D. HAAGENSEN, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

**Masson J. C. and Hamrick R. A.** Pseudomyxoma Peritonaei of Ovarian Origin. An Analysis of Thirty Cases. *Surg. Clin. North Am.*, 1930, V, 61.

In the cases of pseudomyxoma peritonaei of ovarian origin which are reviewed by the authors the condition occurred most frequently in the sixth decade of life. The average age was forty nine and nine tenths years. Eighty per cent of the patients were past the age of forty years.

Swelling of the abdomen and pain are the two most constant symptoms. The average duration of

the symptoms before operation in the cases reviewed was less than one year.

On general examination, the pelvis and abdomen are usually found to contain one or more masses. A large tense abdomen with a questionable fluid wave on palpation may be the only abnormality noted. In the cases reviewed the right ovary was involved more frequently than the left.

Bilateral involvement was more common in patients with ruptured pseudomucinous cystadenoma than in patients with an unruptured tumor of the same type. It was especially frequent in cases of malignant lesions and those in which papillomata were present.

Pressure from the mucilaginous tumors plays an important part in the health of patients with pseudomyxoma peritonaei.

In the cases reviewed the chief factors in the operative mortality were pulmonary embolism and general peritonitis.

The prognosis is better of course in cases of benign than in cases of malignant lesions. One of the patients whose cases are reviewed lived eleven years after the diagnosis was made at operation, and another is still alive and free from symptoms eleven years after a definite diagnosis. The duration of life after diagnosis ranges from four to eleven years.

In the cases of women with pseudomyxoma peritonaei of ovarian origin who have passed the menopause removal of both ovaries and of the appendix is urgently indicated. In the cases of women who have not passed the menopause it is generally desirable to save one ovary. However, the surgeon should take into account the type of growth in the affected ovary as the leaving of one ovary may be of questionable value. Hysterectomy is indicated in some cases and resection of the omentum in others. As much of the gelatinous material as possible should be removed from the abdominal cavity at operation.

The bowel and even the uterus may be perforated or invaded by the pseudomucinous tumors.

Treatment with the roentgen ray or radium should be given in all cases.

#### EXTERNAL GENITALIA

**Schultheiss H.** Spontaneous Disinfection of the Vagina. (Ueber die Selbstreinigung der Scheide). *Ztschr. f. Geburtsh. u. Gynæk.* 1929, LV, 1.

The first part of this article reports the findings of studies regarding the presence of bacteriophages in the vaginal secretions. The author first gives a comprehensive review of the extensive literature on the subject to date. In his attempts to demonstrate bacteriophages in the vaginal secretion of pregnant, non pregnant, and puerperal women, he limited his investigations chiefly to the bacteria which are important causes of puerperal infection viz streptococci, staphylococci, and colon bacilli. In order to determine whether lytic processes in the sense of d'Hérelle are in any way concerned in the process of spontaneous cleansing of the vagina he used vaginal

secretions obtained only from patients who, except for a possible leucorrhoea, showed no sign of any severe genital affection. Twenty eight bacterial strains were tested for the d'Herelle phenomenon—ten strains of staphylococci, six of streptococci, ten of colon bacilli, and six of vaginal bacilli. The studies were made on a total of sixty different vaginal secretions, of which thirty were obtained from pregnant women, twenty from non pregnant women, and ten from women in the second week of the puerperium. The technique of culture in 1 per cent glucose bouillon with a hydrogen ion concentration of pH 7.4 is described in detail and must be read in the original article.

The results of the studies were in no case indisputably positive. The author therefore concludes that, under normal conditions, bacteriophages for the bacteria responsible for puerperal fever are not present at all or are present only occasionally in the vagina. He states that, at the most, the vagina contains only weakly virulent bacteriophages for the colon bacilli which play no part in the spontaneous cleansing of the vagina. The particular character of the flora of the genital tract has no relationship to a lytic effect.

The second part of the report deals with the importance of the acid content of the vaginal secretion as a factor in the process of spontaneous cleansing. Following a detailed discussion of the theories and investigations recorded in the literature up to the present time, the author reports studies carried out by him to determine the still disputed importance of the vaginal lactic acid as a factor in the process of spontaneous disinfection of the vagina. In these studies also the staphylococcus, streptococcus, and colon bacillus were employed. The growth of a large number of strains of various origins in acid carbohydrate containing and proteo containing nutrient fluid, their power to produce acid, their acid tolerance, and the relation which the two latter factors bear to each other were determined in order to find out if any indications might be drawn therefrom to the pathogenicity of these organisms.

A 2 per cent glucose bouillon (0.5 per cent sodium chloride, 1 per cent peptone, 1 per cent meat extract, and 2 per cent glucose) with an increasing hydrogen ion concentration was employed. To the bouillon with an average hydrogen ion concentration of pH 6.1, lactic acid was added according to a definite formula to attain the desired hydrogen ion concentration. In most instances the bacteria used for culturing were obtained from twenty four hour bouillon cultures or from young plate cultures. The period of incubation was at least three days and frequently from four to eight days. In general, the acidification reached its maximum after three or four days, but with many strains not until somewhat later. The experiments are described in detail.

The results obtained showed that the streptococcus is by far the most sensitive to acid. Even with fresh cultures it was impossible to obtain a visible growth with a hydrogen ion concentration below

pH 5.2. Most of the streptococci which died quickly in a culture medium with a hydrogen ion concentration below pH 5.0 belonged to the weak acid formers. The strong acid-forming strains usually died to their own acid after a few days. Staphylococci and colon bacilli have about the same acid end values, the zone of optimal growth for both varieties of bacteria lies approximately between pH 5.8 and 8.2. The limit of tolerance of the staphylococcus is between pH 4.3 and 4.4, and that of the colon bacillus, between pH 4.5 and 4.6.

On the other hand, the normal bacteria of the vagina produced and tolerated incomparably higher acid concentrations. In a culture fluid of pH 4.0 they were still capable of growth after days. The highest observed acid value corresponded to pH 3.5. As these findings agree with the high hydrogen ion concentrations of the vaginal secretion in cases of pure cultures of bacilli, it is possible that the vaginal flora are alone responsible for the chemism of the vagina. As three fourths of all pregnant women have a vaginal secretion with a hydrogen ion concentration below pH 5.0 and the remaining fourth a vaginal secretion with a reaction at least acid enough to offer the streptococcus a decidedly unfavorable chance for development, the importance of these experimental findings, together with phagocytosis, the bactericidal properties of the tissue fluids, and anaerobiosis, in the ability of the vagina to protect itself against pathogenic organisms causing infection in childbirth is evident. WERNER STRAKOSCH (G)

Stoeckel. The Treatment of Carcinoma of the Vulva (Die Therapie des Vulvacarcinoms). *Arch f Gynaek.*, 1929, CXXXVII, 937.

The author reviews the twelve operative methods that have been used in Germany since 1880 for the treatment of carcinoma of the vulva. According to the literature, only seventy-three of the patients remained free from recurrence for longer than five years. Of these, 35.6 per cent were permanently cured. Since 1913, 126 patients treated with irradiation have been observed for periods longer than five years. Of these, 11.9 per cent have been permanently cured.

The author is an advocate of the Rupprecht radical operation. This procedure is technically simple and can be carried out under local anesthesia, but its performance requires at least one hour and it produces a large wound surface. The removal of the glands is associated with great danger of infection, which is the chief cause of the primary mortality. Stoeckel intends in the future to use radium irradiation also, either extirpating the tumor and irradiating the glands, or vice versa.

In conclusion, the author discusses recurrences. Not rarely, recurrences develop very quickly, but sometimes not until after a period of years. The treatment of recurrences is more favorable than in carcinoma of the cervix as even those that are very extensive can be treated by electrocoagulation.

P. KIEN (G)

## MISCELLANEOUS

**Dyroff, R.** Experimental Studies on the Physiology of the Female Genital Tract. Contributions on the Nerve Supply (Experimentelle Untersuchungen zur Physiologie des Genitaltraktes beim Weib. Beiträge zur Nervenversorgung) *Arch f Gynaek*, 1920 cxxviii, 36

This article begins with a critical discussion of the findings of previous experimental studies of the anatomy and physiology of the female genital tract and of the theories formerly held. The contradictions in previous reports are attributed to differences in the material and the manner in which the experiments were conducted, failure to make exact observations as to the localization and form of the contractions, obscurity of language and of thought, and the influence of preconceived theories.

In a special chapter the author discusses the technique of his own experiments, the conditions under which the experiments were carried out, and the purpose of his investigations. The experimental animals were rabbits. Some of the rabbits had never been pregnant, others had been pregnant previously, and others were pregnant at the time of the study. The experiments are reported in detail.

A critical discussion of the experimental findings regarding the nature of the antagonism between the sympathetic and the parasympathetic is followed by the author's conclusions with regard to the coordination of the vegetative nervous system in the production of the peristaltic waves and an attempt to explain the differences noted in the contraction of the muscle fibers. Dyroff believes that the antagonism between the parasympathetic and sympathetic consists not only in the functions of stimulation and inhibition but also in the production of another form of contraction. He states that the motor expression of the parasympathetic is a rhythmic progressive movement, whereas that of the sympathetic is a change in the tonus of the musculature. However both of the vegetative systems contain inhibitory fibers for the corresponding antagonist. Genital peristalsis is the expression of a regulated coordination of the vegetative nerves. The parasympathetic has, in addition, a vasodilating and a secretory function and the sympathetic has a vasoconstricting function and the function of determining the point at which the contraction will begin.

The last part of the report consists of a discussion of the identity of function of the internal secretions and the vegetative nervous system in the female genitalia and the partial functioning of the vegetative nervous system in the internal female genitalia. Dyroff states that during pregnancy the corpus luteum of pregnancy and the fetus produce increased tonus of the parasympathetic which leads to a compensatory reaction in the form of increased tonus of the sympathetic. The same reactions are seen as the corpus luteum effect in the premenstrual period. The protective influence of the corpus luteum is continued up to the time of the implanta-

tion of the ovum. Thereafter, the corpus luteum receives the protection of the ovum.

VON WEINZIERL (G)

**Newell, O. U., Allen, E., Pratt, J. P., and Bland, L. J.** The Time of Ovulation in the Menstrual Cycle as Checked by the Recovery of Ova from the Fallopian Tubes. *Am J Obst & Gynec*, 1930 xix 180

Of nine specimens of ova recovered from the fallopian tubes at operation, five were successfully sectioned and definitely identified as tubal ova.

The authors describe a method of irrigating the tubes *in situ* which is believed to be safe, makes available for study cases in which the tubes show no pathological changes and therefore are not to be removed, and is of value in determining the patency of the tubes in cases of obstruction when the abdomen is open and plastic work has been done.

In the series of cases reviewed, the time of ovulation was the twelfth, thirteenth, or fourteenth (morning of the fifteenth) day following the onset of the previous menses.

The cervix was clamped by a special rubber covered forceps and one tube was compressed by an assistant. A small bore needle was then inserted through the uterine wall and 20 c cm. of normal salt solution were injected. The washings were collected on a watch glass.

E. L. CORNELL M.D.

**Dahl Iversen, E.** Experimental Studies on Free Implantation of Endometrium in the Peritoneum of Guinea Pigs. (Experimentelle Untersuchungen ueber freie Einpflanzung von Endometrium ins Bauchfell beim Meerschweinchen) *Hosp Tid*, 1929 ii 931

In experiments previously reported by the author it was found that deeply situated endometrium forms multiple cysts into which glands with normal lumina open. These cysts are partially or completely surrounded by cystogenous stroma. It was demonstrated also that endometrium on the surface of an organ forms a polyp of endometrial stroma with normal glands which is covered by typical uterine epithelium. The changes induced by experimental endometriosis were identical with those found in human endometriosis but the author emphasized in his report that it is impossible to prove the correctness of Sampson's theory by experiments on animals. With regard to the differences between experimental and human endometriosis attention was called to the fact that in experimental endometriosis beginning with "menstruation" no parallel phenomena were observed in the transplant.

In contrast to Jacobson who, in experiments on rabbits and apes always performed free transplantation and subperitoneal implantation simultaneously, the author employed only free intraperitoneal transplantation in his experiments on guinea pigs. The extirpated horn of the uterus was incised and the mucosa which was then scraped out was introduced in the form of very small particles in a bloody

medium about the uterus and the lower loops of the small intestine

Nine of the thirteen animals were six or seven months old and four were four months old. They were killed from three to four months after the laparotomy. One animal died three months after the operation from strangulation ileus. The abdomen and all of the abdominal viscera were examined for endometrial growths systematically and by serial sections. The author gives the protocols in detail.

In twelve instances the results were positive. Six times the freely implanted material became implanted on the incised surface of the mesentery to the extirpated uterine horn, seven times, in the angle between the cervix and the bladder, three times, at the base of the mesentery of the extirpated uterine horn, once, at the juncture of the cervix and the remaining uterine horn, and eight times, in the abdominal scar, partly embedded in the omental adhesions.

In the neighborhood of the implant there were numerous adhesions. No endometrial formations were found in other locations. In eight instances the implant had developed a polypoid excrescence from the endometrial tissue. In the seventeen other sites the endometrium was situated deep. In the periphery of the endometrial focus there was usually a concentrically arranged hundle of smooth muscle. In six instances the uterus was at the height of menstruation and this was evidenced in five trans-

plants by increased vascularity, transudation of blood into the tissues, and epithelial desquamation. There was agreement also between the oedema of the stroma cells of the uterus and the implant.

The previously noted difference between the transplant and the uterine mucosa as regards vascularization, hæmorrhage, and epithelial desquamation seems to hold good only in the more deeply situated transplants. In the superficially situated transplants there is full agreement. This discordant relationship was observed also in four cases with both deep and superficially situated endometrium.

The author's recent investigations show that endometrium free in the abdominal cavity becomes implanted only at sites where the serosa was injured during the laparotomy, namely, the edge of the ligated mesentery, the mesentery itself when it was palpated, the other uterine horn which was examined at the same time the angle between the cervix and the bladder where manipulations were necessary to ligate the uterine horn at its connection with the cervix, and the abdominal scar. They show also that the presence of blood in the abdominal cavity is not able to cause such a serosal lesion. Experiments performed on animals cannot be used to prove Sampson's theory of endometriosis. Only the assumption that menstrual blood possesses particularly irritating properties will explain the serosal lesions necessary for endometrial implantation.

SAFNER (G)

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Mayer, A. The Biology of the Placenta. I Physiology (Biologie der Placenta. I Physiologischer Teil) *Arch f Gynaek* 1929, cxxxvii 1

Mayer discusses very exhaustively (the bibliography alone covers thirty five pages) the chief problems regarding the relationships between the mother, fetus and placenta. His purpose is not so much to classify facts already known but to call attention to the gaps in our knowledge and thereby stimulate efforts to fill them by experimental investigation. Twelve large chapters beginning with preliminary anatomicophysiological observations take up the functions of the placenta (fetal respiration, nutrition, and excretion, transmission between the mother and fetus, and internal secretion) their relationship to fetal development, the onset of labor, and lactation, and their applicability to the diagnosis of pregnancy and the intra uterine diagnosis of sex.

In the thirteenth chapter, E. Vogt gives a thorough presentation based on experimental and clinical data of the rôle of the vitamins for the mother and child, their occurrence in the placenta and their relationship to the placental and female sex hormones. RUSE (G)

Runge, H. The Role of the Placenta in the Carbohydrate Metabolism of the Fetus (Welche Rolle spielt die Placenta im Kohlenhydratstoffwechsel des Fetus?) *Arch f Gynaek* 1929, cxxxvii 734, 752

The difference in the blood sugar level of the mother and fetus has been ascribed to an active gland like regulatory function on the part of the placenta. This explanation leads to the question whether sugar from the mother's blood is stored in the placenta perhaps as glycogen or whether the regulatory action of the placenta consists in the establishment in the fetus of a sort of threshold.

Kessler demonstrated that the mature human placenta has only a very slight glycogen content which is not increased by even long continued ingestion of sugar by the mother. Moreover, glycogen cannot be demonstrated in the placenta even with histochemical methods.

To answer the second question a separate blood sugar analysis of the arterial and venous bloods of the umbilical cord was necessary. A woman in labor was given 20 gm. of dextrose every half hour. At the moment of delivery the tensely filled umbilical cord was clamped off and blood was obtained by puncture. The average value for the fetus was always below that for the mother but the blood sugar curve of the fetus always rose coincidentally with that of the mother. The value in the umbilical artery was lower than that in the corresponding vein. The auto-

matic increase in the fetal blood sugar level with any increase in the blood sugar level of the mother can be explained only by simple diffusion.

To explain the difference between the blood sugar levels of the mother and child the author assumes that the self regulatory action of the liver plays a part. He states that the development of the organs regulating carbohydrate metabolism is very marked in the fetus. According to his theory, the blood rich in sugar comes to the liver through the portal circulation of the fetus and the sugar is there removed and stored as glycogen. This assumption is supported by the high glycogen content of the fetal liver. Differences in the sugar content of the maternal and fetal blood, therefore do not disprove the diffusion theory. KESLER (G)

Wagner, G. A. The Intervillous Space (Der intervillöse Raum) *Arch f Gynaek*, 1929, cxxxvii 699, 732

Wagner says that it must now be considered as proved that there is an intervillous space which is lined practically completely by fetal cells. The maternal blood in the intervillous space is used by the fetal villi for nutrition and for the throwing-off of waste products. A constant mixture of unused and used blood is therefore a biological necessity. If the mixture is satisfactory, even a very slow current of blood in the broad stream of the intervillous space may be sufficient for the needs of nutrition. One driving force is the mother's heart which rhythmically raises the pressure in the intervillous space, and during diastole lowers it. Another driving force is the rhythmic contraction of the fetal vessels which increases and decreases the size of the villi. The size of the chorionic villi in relation to the space between them varies from 60 to 70 per cent.

The author has demonstrated the rhythmic fluctuations in the size of the villi in a living gravid uterus with the aid of an under water stereomicroscope. Particularly interesting were his observations on a uterus containing a fetus of more than five months.

He studied the problem also on a model. At the base of a vessel containing water a rhythmic flow of red colored fluid was produced from two tubes representing arteries and two other tubes, representing veins, were provided for exit of the water. A system of villi made of rubber and capable of being rhythmically distended by the action of a rubber pump was then suspended in the water container. When the hand pump was not worked the red fluid entering at the bottom did not rise but when the system of villi was rhythmically distended and relaxed the red fluid was whirled high between the villi.

In this way it was possible to visualize the circulatory relationships in the intervillous space. Wagner concludes that contractions of the uterus do not maintain this circulation, as Grosser thinks. With the aid of Crodel's hysterometer, he was able to demonstrate in utero beyond the fifth month of pregnancy that there are, at the most only very slight increases in tonicity, and that these occur only at very long intervals.

In the discussion of this report, HALBAN (Vienna) stated that the vessels pulsate only when they are diseased or compressed. He compared the intervillous space to a lake with quiet water, but with an inflow and an outflow.

In closing the discussion, WAGNER said that the pains of pregnancy cannot be regarded as the propelling force, and that pulsations of the villi may be observed directly. TIEZT (G)

Grosser, O. The Significance of the Intervillous Space (Ueber die Bedeutung des intervillösen Raumes) *Arch f Gynaek*, 1929, cxxxvii, 681, 752

The two types of haemochorionic placenta are compared and briefly described anatomically—the labyrinth placenta and the villous placenta. The human placenta is of the latter type. In the labyrinth placenta the maternal blood flows rapidly in narrow maternal blood vessels and is propelled by the mother's heart, whereas in the villous placenta the maternal blood flows sluggishly through broad irregular blood spaces and the propelling force is believed to be the pains of pregnancy. In the villous placenta the chorionic epithelium has sufficient time to take out the nourishment from the sluggish stream of the maternal blood and convert it into a suitable form, whereas in the labyrinth type of placenta it requires aids for the digestion of the nutriment brought to it in the rapid maternal circulation. These are (1) special histotrophic cells for absorption (chorion laeve, the vitelline sac of rodents, the varying substructure of the placenta), and (2) the persisting subplacental and intercotyledonary syncytial lacunae. Except in the Madagascar hedgehog, the latter are in general excluded from the placental circulation, but the author sees in this fact no insurmountable objection to his theory, because the disintegrated food elements eventually return to the placenta even though they do so in a round about way through the body of the mother.

In conclusion, the author expresses the opinion that the proteins which are broken down in the intervillous space of the human placenta may find their way into the maternal circulation and under certain conditions may cause a toxæmia of pregnancy.

In the discussion of this report, SCHROEDER (Kiel) reported the findings of experiments in which he injected the intervillous space of extirpated gravid uteri through the uterine artery. He found that the space is from 50 to 100 microns wide. He stated that the inflow of blood occurs through spiral arteries and the outflow through veins that run parallel with the placenta. The circulation of the fluid in the space,

which is kept under tension by the uterine wall, is carried on with the aid of the pulsating fetal villi.

PASKOW (Freiburg) advanced the opinion that there is a constant flow in the intervillous space induced by the pulsations of the villi and the pains of pregnancy.

HALBAN (Vienna) rejected the theory that the pains of pregnancy are the propelling force for the circulation in the intervillous space.

In concluding the discussion, GROSSER suggested that the intervillous space may be subdivided into a basal and a chorionic part, the former serving for gaseous metabolism and the latter for protein metabolism. TIEZT (G)

Crabtree, E. G., and Prather, C. C. Clinical Aspects of Pyelonephritis in Pregnancy. *Ann Engl Med J*, 1930, cccii, 357

Crabtree and Prather believe that some degree of back pressure on the kidneys with dilatation of the ureters and renal pelvis is the rule in pregnancy whether urinary infection is present or not. They state that residual urine is to be found in both kidneys in all instances. The average amount is from 20 to 40 ccm. The back-pressure is most marked in primiparae, is present to some degree in multiparae who have had several pregnancies in rapid succession, and may persist for short intervals even between pregnancies. The authors are convinced that the cause of urinary stasis in pregnancy is a tightly fitting fetus in an inelastic abdomen in the case of a woman who is in the midst of her first or second pregnancy. They have found that bacteriuria are more frequent in pregnancy than urinary tract infections. In a total of 10,132 obstetrical cases, postpartum pyelitis occurred 20 times and pyelitis of pregnancy 169 times.

The bacterium concerned in the pyelitis of pregnancy is the colon bacillus. Clinically, infection of the kidneys during pregnancy leads to 2 definitely different renal conditions, the one essentially a pyelitic type of infection and the other a pyelonephritis. The symptoms produced by urinary tract infections in pregnancy may differ considerably from those of the same disease unassociated with pregnancy. In no instance has surgery on the kidney or ureter produced miscarriage. Cystoscopic examination and manipulations may be made with the same freedom in the presence of pregnancy as in the non pregnant state. The essential factor in the treatment is lavage of the renal pelvis until thick pus is evacuated. This should be done at intervals of about three days. In lying catheters to keep the pelvis empty are not satisfactory. Cystoscopic treatment favors continuation of the pregnancy to term, but should not be persisted in if the patient's life is endangered. Forced drinking of fluids is indicated. Slight distentions of short duration are of little importance, but large over distentions lasting for weeks or months cause prolonged impairment or permanent damage of the pelvic structures.

Fifty seven per cent of all cases of pyelitis of pregnancy and the puerperium reviewed by the authors were those of primiparae and 29 per cent were those of para II.

The symptoms frequently point to right or left sided involvement even in the bilateral form of the disease. In the cystoscopically examined cases of pyelitis of pregnancy in primiparae which are reviewed by the authors the lesion was on the right side in 32.5 per cent and on the left side in 5.2 per cent and was bilateral in 60.3 per cent.

Certain infections become cured spontaneously and allow completion of the pregnancy without any treatment other than rest in bed and the forcing of fluids.

Residual urine was found in practically all of the cases reviewed. In most instances the right kidney showed a greater amount than the left kidney. The authors believe that the patients progress better when cystoscopic treatment of both kidneys is instituted whether or not the symptoms indicate the presence of infection on both sides.

The greater frequency of pyonephrosis in the female as compared with the male may be due to damage to the kidney acquired during pregnancy. The average time required for recovery from infection of the kidneys in pregnancy is three months. The authors emphasize that there is a marked difference between symptomatic cure which may be immediate—a clear urine cure and a cure with bacteria free urine. They state that when the infection persists after three months the patient should be subjected to pyelography and given more intensive treatment. No woman with renal infection should become pregnant again until the infection is gone. When once the kidneys have become infected, pyelitis will persist throughout the pregnancy. In seven years' observation of such cases the authors have seen only 3 cases in which the urine was free from bacteria during pregnancy.

In conclusion the authors state that the obstetrician's care of urinary infections should not end with the subsidence of the acute symptoms nor at the end of the pregnancy.

ROLAND S. CROFT, M.D.

Roloff W. Collapse Therapy for Pulmonary Tuberculosis in Pregnant Women (Zur Kollapsbehandlung lungentuberkulöser Schwangerer). *Zentralbl f. Gynaek.* 1929 p. 2972.

Collapse therapy for pulmonary tuberculosis in the presence of pregnancy generally consists in pneumothorax of one or both lungs, thoraco-cauterization or oleothorax. Exeresis of the phrenic nerve is seldom to be considered. Recent views regarding the treatment of pregnant women with pulmonary tuberculosis are in favor of collapse therapy with continuation of the pregnancy.

The indication for pneumothorax treatment is the same in pregnancy as in other conditions. In closed tuberculosis, collapse therapy is usually not necessary, but is occasionally done. Among cases of open

tuberculosis those with broken down early infiltration are especially suitable for this treatment. Bilateral pneumothorax comes up for consideration especially in the second half of the period of gestation when interruption of pregnancy is a serious menace to the patient. In the presence of simultaneous tuberculosis of the intestines this treatment is not to be considered as the intestinal tuberculosis is, as such, affects the course of the disease unfavorably.

The technique of pneumothorax therapy is based on the general principles of this form of treatment, but at the end of pregnancy smaller amounts of air are used. Immediately after delivery, the trunk should be weighed down by a sand bag in order to prevent too rapid sinking of the intra abdominal pressure after emptying of the uterus and gradually equalize the pressure in the cardiovascular system.

The author summarizes the guiding principles for pneumothorax treatment in pregnancy as follows:

1. Pregnant women with pulmonary tuberculosis should be admitted to sanatoria with suitable facilities for their delivery.

2. Pregnancy is not a contra indication to pneumothorax therapy.

3. Pregnancy occurring during the course of pneumothorax treatment may be allowed to go to term only when the pneumothorax treatment is in effective should interruption of the pregnancy be considered.

4. At the end of the pregnancy, refillings should be made with smaller amounts of air and low pressure values.

5. The second stage of labor should be shortened as much as possible.

6. Inhalation anesthesia should be used with great care because of the danger of pulmonary injury.

7. The trunk should be weighed down immediately after delivery and the pneumothorax should be refilled with a slight negative pressure.

8. The child which is practically always free from tuberculosis when born should be taken away from the mother immediately.

9. Breast feeding should be advised against, as there is a possibility that the tubercle bacilli may be transmitted in the milk.

10. Special care and observation are necessary in the puerperium.

11. After the puerperium the tuberculous mother urgently requires sanatorium treatment for several months.

HARTMANN (G)

Groné O. The Clinical Course and the Treatment of Necrotic Interstitial Myomata During Pregnancy (Ueber die klinischen Verlauf und die Behandlung von interstitiellen nekrotischen Myomen während der Schwangerschaft). *Acta obst. et gynec. Scand.* 1930 ix, 203.

The author states that necrosis of myomata associated with pregnancy should be regarded as a distinct clinical entity as its clinical course and treatment are considerably different from the clinical

course and treatment of the condition not associated with pregnancy

He illustrates the fairly typical clinical picture by reporting six cases which he has had under treatment in recent years. As typical symptoms and signs he emphasizes pain of acute onset, marked tenderness over the palpable tumor and its immediate neighborhood, and a slight rise in the temperature. In five of the cases the diagnosis was verified by operation. In one case the symptoms disappeared under expectant treatment.

The treatment should be expectant at first, but if the symptoms persist or become aggravated, operation is indicated. Enucleation of the myoma usually has a good result. Amputation of the uterus is necessary only in cases coming so late for treatment that a serious infection has had time to develop. This was the condition in two of the author's cases. One of the patients recovered, but the other died. Of the three cases treated by enucleation, recovery resulted in all and the pregnancy continued normally in term in two. In the third case abortion had occurred prior to the operation.

In conclusion the author reports two more cases of enucleation of myomata in a pregnant uterus in which the pregnancy was terminated by normal delivery at term.

## LABOR AND ITS COMPLICATIONS

**Newman: Infant and Maternal Mortality in the Conservative Conduct of Labor** (Kinder und Muttersterblichkeit bei konservativer Geburtsleitung) *Arch f Gynaek*, 1909, cxxviii, 818, 842

To determine whether, in general, a conservative or an active attitude is preferable in the conduct of labor, the author reviewed the mortality in 4,000 deliveries conducted conservatively in the period from June, 1924, to March, 1929. The total maternal mortality was 0.525 per cent and the infant mortality 2.7 per cent. The good results are ascribed principally to the waiting policy followed in cases of narrow pelvis. The frequency of narrow pelvis in Innsbruck is slightly over 10 per cent. Of 400 cases of narrow pelvis, spontaneous delivery resulted in about 370 (approximately 92 per cent). In only 33 (about 8 per cent) was operative interference necessary. In 10 (2.5 per cent), delivery was effected by abdominal cesarean section. In these cases there was no maternal or infant mortality. The author believes that the danger of sepsis from vaginal manipulations is no greater than the danger of peritonitis from abdominal cesarean section. In the 63 cases of placenta previa or transverse position of the fetus, in nearly all of which vaginal procedures were carried out, there was only 1 death, that of a woman with placenta previa who entered the hospital in a moribund condition. However, because of the high infant mortality in placenta previa, it has been decided at the Innsbruck Clinic that cesarean section will be performed more frequently hereafter in cases of this complication. **DIERKS (G)**

**Frey, E: The Functional Diagnosis of the Two Narrow Pelvis by Registratin of the Labor Pains** (Die funktionelle Diagnose des zu engen Beckens an Hand der Wehenregistrierung) *Arch f Gynaek*, 1929, cxxxviii, 883, 897

To answer the questions as to how long labor can be continued without injury to the mother and child and how long it must be continued before the impossibility of spontaneous delivery of a living child can be assumed with considerable certainty, the author suggests registratin of the frequency of the labor pains per half-hour period and of the duration of the contraction associated with the individual pains. These determinations will show the possibility or impossibility of spontaneous delivery early in the course of labor and with considerable accuracy.

Frey emphasizes the basic differences in the activity of the labor pains before and after rupture of the membranes, calling attention to the fact that, before rupture of the membranes, there is practically no molding of the head, whereas after the rupture, molding is demonstrable even in the closed uterus without pains and in a contracted pelvis.

A systematic study of the labor pains in 800 deliveries in the cases of women with a normal pelvis and 200 deliveries in the cases of women with a contracted pelvis made it possible to establish the standard maximal number of labor pains in the normal pelvis and the critical maximal number of labor pains in the contracted pelvis. The maximal number of labor pains is reached in only from 2 to 10 per cent of spontaneous deliveries, but when, after the critical maximal number of labor pains has been reached, the periods of dilatatin and expulsinn are not yet completed, the possibility of spontaneous delivery can be excluded with practical certainty. When the maximal number of labor pains is not exceeded, neither the mother nor the child will sustain lasting injury. Frey believes that in every labor a record of the labor pains should be made.

In the discussion of this report, **KONRAD SZOLNOK** reviewed the various methods of inducing labor with pituitrin, castor oil, and quinine, and described those which he has found best—dilatatin with Hegar sounds, packing of the cervix, and the injection of echolics, possibly repeated. In 85 per cent of the cases the labor pains are active within twelve hours, if not, the whole procedure is repeated.

**ANTOINE** discussed the determination of the shape of the pelvis and stated that reports regarding the functional capacity of the musculature had been made from his clinic. He believes that counting the labor pains according to Frey's method is not sufficient as it is necessary to know not only the number but also the intensity of the pains to arrive at a definite conclusion regarding the possibility of the child's passage through the pelvis.

**GUTHMANN** stated that stereoscopic exposures have two great disadvantages—the cost of the apparatus and the double irradiation of the skin at each exposure. He has found lateral exposures of most aid in the diagnosis and prognosis.



SCHWARZ reported that he also is an advocate of lateral exposures of the pelvis, but emphasized that they should be supplemented by an exposure in the sagittal direction.

HERMSTEIN agreed with the favorable reports regarding the induction of labor by medical means and the value of lateral exposures of the pelvis in diagnosis but stated that lateral exposures have failed in the prognosis.

CRODEL recommended his gauge of labor pains by which it is possible to determine not only the duration of the labor pains but also their intensity.

GRAEFENBERG stated that he had induced labor in seventy-two cases and in 86 per cent had good results from a combination of hot baths, castor oil, and the injection of quinine and thymophysin. When these procedures failed a completely successful result was obtained from rupture of the membranes. Thymophysin proved of great value and had no harmful effect.

SCHUMACHER called attention to the sources of error in measurement of the width of the skull when the head lies in a pelvic inlet rather than in the median position. This error can be eliminated by combining the lateral exposure with the sitting posture.

EXNER stated that as early as 1913 he called attention to lateral exposure as the ideal procedure for measurement of the pelvis. VON WEDZIEHL (G)

Khreninger Guggenberger von Brow. Presentation (Ueber Stirnagen). *Arch J Gynæk*, 1929, cvvii u 838.

The author discusses the problem as to whether, in cases of brow presentation, abdominal section is not preferable to delivery by the natural route since, according to the material of various clinics in which an expectant policy is followed and the numbers of spontaneous and operative deliveries are about equal the dangers of caesarean section for the mother are no greater than those of the application of forceps. The infant mortality in cases of brow presentation is very high being 20 per cent even in spontaneous deliveries. Delivery is effected most frequently with forceps. The chief cause of brow presentation is contracted pelvis. The children are usually of normal size. The maternal mortality is from 3 to 4 per cent. The author concludes that forceps should not be employed in cases of brow presentation and that the results can be improved only by the more frequent performance of caesarean section. LEEVER (G)

Westman A. The Results of Obstetrical Operations in the University Gynecological Clinic of the Allmänna Barnbördshuset in Stockholm During the Period from 1919 to 1928 (Ueber die Resultate der Geburtshilflichen Operationen an der Universitätsfrauenklinik des Allmänna Barnbördshuset in Stockholm während der Jahresperiode 1919-1928). *Acta obst et gynec Scand*, 1930, ix 642.

Of 28,206 labors 1,908 (6.8 per cent) were terminated by instrumental aid. The maternal mortality

after spontaneous delivery was 0.23 per cent. After simple forceps interventions the total maternal mortality was 0.9 per cent and the corrected maternal mortality 0.4 per cent. After more complicated vaginal interventions the total maternal mortality was 3.3 per cent and the corrected maternal mortality 1.9 per cent. The total mortality of caesarean section was 8.3 per cent and the corrected mortality 4.3 per cent. These findings definitely refute the claim of Hirsch that caesarean section is a less dangerous undertaking for the mother than vaginal interventions for delivery.

## PUERPERIUM AND ITS COMPLICATIONS

Prather, G. C., and Crabtree, E. G. Pyelitis in the Puerperium. *New England J Med*, 1930, cclii, 366.

Postpartum pyelitis should be recognized as a possible cause of puerperal fever. Forty-eight per cent of the cases are those of primiparae. The most probable etiological factors are (1) trauma at delivery, (2) postpartum bladder complications and (3) a flare up of a latent pyelitis. Local symptoms may be absent even though the pyelitis is responsible for the fever.

The most reliable clinical signs of the condition are costovertebral tenderness and the presence of pus in the catheter specimen. Cystoscopy is sometimes necessary to establish the diagnosis.

Conservative treatment with forced fluids as the most important item is advised. Cystoscopic treatment is indicated if the temperature remains elevated more than eight days. The average period before recovery (sterile urine) is about four months.

ROLAND S. CROW, M.D.

## MISCELLANEOUS

McIlroy, L. Maternal Mortality. *Brit M J*, 1930, i, 269.

McIlroy reports that in the obstetrical unit of the Royal Free Hospital, London, the maternal death rate during the last eight years was 2.7 deaths per 1,000 cases. The chief causes of death were obstetrical shock, hæmorrhage, and sepsis. The importance of antenatal care is proved by the infrequency of accidental or toxic hæmorrhage in hospital practice.

The avoidance of contagion is essential. Attendants should be free from carious teeth and septic tonsils. However, the most common source of infection is the patient herself. Nurses and assistants should not scrub their hands with brushes and strong antiseptics as the resulting abrasions and cracks of the skin may become septic. Vaginal examinations should be quite unnecessary in normal cases which have had antenatal supervision and those in which abdominal methods of diagnosis are efficient. McIlroy emphatically condemns rectal examination as the incidence of sepsis is increased when it is used. She states that in the

third stage of labor the patient should lie on her back. The uterus should be left alone as manipulations by the hand on the abdomen tend to cause suction of the lower membranes into the cervix from the vagina where they have become infected to some extent from contact with the walls. During the puerperium infection may take place from contact with bedpans or from swabbing by a nurse.

The treatment of sepsis consists in early isolation, nursing in an open air ward, daily colonic lavage, the daily administration of from 20 to 40 c cm of anti streptococcus serum, the daily injection into the buttock, of from 5 to 10 gr of quinine hydrochloride, and blood transfusions. Abortion, especially criminal abortion, is an increasingly frequent cause of maternal mortality.

The death rate from eclampsia has been greatly reduced by the Tweedy Stroganoff treatment, the decrease in the frequency with which cesarean section is performed, and the abandonment of accouchement force.

Some of the deaths in cases in which no clinical or postmortem evidence of a pathological process is evident are due to obstetrical shock.

The frequency of cesarean section in the obstetrical unit of the Royal Free Hospital during a period of eight years was 16 per cent and the mortality of the operation 39 per cent. In unfavorable conditions the mortality varies from 10 to 50 per cent. Since the author began the practice of operating only after the patient had been in labor a few hours the frequency of cesarean section has been reduced. Deaths from cesarean section are due mainly to shock or sepsis.

Forceps are used in the Royal Free Hospital unit in 5 per cent of cases. They should not be applied unless the head is close to the pelvic outlet. High forceps no longer have a place in obstetrics. The author advocates the squatting position in the second stage of labor to drive the head down. She states that students should be taught not so much the indications for the application of forceps as its risks and what can be done to render it unnecessary. She emphasizes that pituitrin should be used only when the head is on the perineum and delivery is delayed because of weakness of the pains.

McIlroy thinks antenatal care is the most difficult branch of obstetrics. ROLAND S. CROW, M.D.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Andrea, V. Routes of Absorption in Experimental Hydronephrotic Kidney (Contributo allo studio delle vie di riassorbimento nel rene idronefrotico sperimentale) *Polidun Rome* 1930 **XXIV**, sez. chir. 84

Andrea reports experiments on dogs and rabbits in which after total or almost total occlusion of the ureter had been brought about different solutions were injected into the kidney pelvis immediately or after varying periods of time in order to study the routes of absorption in hydronephrosis.

The results showed that the solution was absorbed by the lymphatic vessels the collecting and convoluted tubules or the veins. The second method of absorption usually began two or three days after the establishment of the hydronephrosis, but if enough solution was injected to produce hyperpressure in the pelvis it began at once.

ANDREW G. MORGAN, M.D.

Hlyés G. von Nephritis and Its Surgical Treatment (Die Nierenentzündung und ihre chirurgische Behandlung) *Ztschr. f. urol. Chir.*, 1929 **XXVIII**, 298

This is a report of the author's experience with decapsulation in cases of acute and chronic nephritis. Among the patients with the acute condition there were five with acute glomerulonephritis. Four of these who were pyemic and anuric, died although after the operation the amount of urine increased from 200 to 600 c cm. The fifth patient who had had one kidney removed three years previously on account of pyonephrosis and who was subjected by the author to nephrotomy in addition to decapsulation recovered. Four patients with bichloride of mercury poisoning and one patient with oxycyanide poisoning succumbed. Of two women with eclampsia who were treated by bilateral decapsulation, one recovered and the other died from uræmia on the third day. Of twelve patients with nephritis aposthematosa eight recovered and four died from sepsis.

The cases of chronic nephritis were cases of nephritis dolorosa chronic focal nephritis in which the pain was due to tension of the capsule or compressing contracting inflammatory processes. Among twelve cases subcapsular local inflammatory processes were found in four and were fatal in one. In six cases in which uric acid crystals arranged in foci on the decapsulated kidney surface were evident even macroscopically recovery resulted—in one case, after a third decapsulation and in three cases after a second decapsulation and nephrectomy. Renal hemorrhages from the inflammatory foci were observed in twenty two cases, including six

cases in which nephrotomy had been done previously one case in which nephrectomy was performed and fifteen cases in which a decapsulation was done. A successful result was obtained in all except one in which a recurrence developed after three months. Four patients with chronic nephritis associated with anuria and one with coma died five with edema and oliguria were benefited and one who was subjected to nephrotomy and implantation of peritoneum reported subjective improvement but objectively showed no change.

On the basis of these experiences, the author recommends decapsulation in cases of acute glomerulonephritis treated without success internally and also in nephritis aposthematosa. In cases of poisoning, success can be expected only when absence of severe changes in other organs from the poisoning can be assumed. The operation is justified in nephritis dolorosa and in renal hemorrhage. In chronic nephritis the indication is still uncertain but the author believes that the operation should be performed more often in this condition, which is usually fatal in order that the therapeutic indications may be clarified further. **VORBEREITUNG (Z)**

Gauthier, C. and Gilbert J. Two Cases of Lithiasis with Anuria in a Solitary Kidney (Deux cas de lithase avec anurie dans un rein unique) *J. d' urol. mèd. et chir.* 1930 **XXIV**, 44

The first case reported was that of a woman of forty years who was subjected to nephrectomy on the right side in April, 1912, for tuberculosis complicated by lithiasis and in the spring of 1914 began to have violent colic in the remaining kidney, the cause of which was shown by roentgen examination to be a calculus in the renal pelvis. At operation the left kidney was found twice its normal size and so fixed by a dense sclerolipomatous sheath that its pelvis could be approached only from the anterior surface. Careful dissection of the sheath was done along the ureter guided by a sound that had been inserted. When the pelvis was opened, a calculus the size of a pea was found. The calculus was removed and the kidney left unsutured. Uneventful recovery resulted. The patient was well until 1927, when she had an attack of pyelonephritis. She is still living, but has signs of nephritis and hepatic insufficiency.

The second case reported was that of a man twenty three years of age who was operated on in December 1928 for a subhepatic cyst. Marsupialization was done. When the authors first saw the patient in March 1929 he had a subcostal fistula which discharged copiously, his general condition was very poor he had had three attacks of nephritic colic on the left side, and his urine was turbid. Roentgenography revealed four small stones on the

left side. On August 3, roentgen examination showed a quite large, nodular, hydronephrotic kidney on the right side. This kidney was removed on August 22. It was practically a multilocular hydronephrotic sac with very little parenchyma.

The operation was followed by improvement in the general condition and a gain in weight. When the authors next saw the patient in November he was in a condition of anuria. The anuria was relieved by a retention catheter and operation for lithiasis of the left kidney was performed on December 5. The kidney was large but apparently normal. A slight pyelonephritis was present. Four calculi were removed from the pelvis by pyelotomy. For the removal of a stone in the upper calyx partial nephrotomy was necessary. Two calculi which were analyzed were found to be made up chiefly of tricalcium phosphate, calcium oxalate, and ammonium magnesium phosphate. Uneventful recovery resulted.

In conclusion the authors state that these cases show the value of roentgenography in operating on the solitary kidney in anuria. By means of the roentgen examination the operations were rendered as conservative as possible. If roentgenography had been performed sooner the operations could have been done under more favorable conditions.

AUDREY G. MORGAN, M.D.

Blanco, S. T. An Important Roentgen Finding. Renocolic Fistula (Hallazgo radiográfico importante, fistula renocolica). *Semana méd.*, 1930, xxvii, 290.

The patient whose case is reported was referred to the author for roentgen examination for tuberculosis of the right kidney. When the sodium iodide was given it caused intestinal colic with uncontrollable defecation. The roentgenogram showed a shadow which passed from the lower pole of the right kidney to the cæcum and suggested a fistula. To make sure of the diagnosis of fistula, a pyelogram was made after the intestine had been emptied thoroughly. This showed the fistula very distinctly. The contrast medium had completely filled the fistula and had flowed also into the small intestine. The fistula had not caused any clinical symptoms. Operation was followed by recovery.

The author emphasizes the value of making a roentgenogram of the entire urinary tract in order to obtain an idea of the form, relations and position of the different parts and the nature of any anomalies that may be present. Such a roentgenogram may be supplemented by roentgenograms of particular regions. Blanco takes roentgenograms of the urinary tract on films measuring 35 by 43 cm., using a short exposure to relatively soft rays and a Potter-Bucky diaphragm.

AUDREY G. MORGAN, M.D.

Papin, E. Nephrotomy without Suture (A propos de la néphrotomie sans suture). *J. d'uról. méd. et chir.*, 1930, xxi, 203.

In experiments on animals carried out in 1924 and 1926, Carson and Goldstein made experimental

incisions in the kidneys extending down to the pelvis and arrested the hæmorrhage by merely keeping the cut surfaces applied to each other for five minutes without any suture at all. The hæmorrhage was effectively controlled and there was no secondary hæmorrhage. Recently, Kornitzer and Teltcher have performed similar experiments on rabbits, varying them in different ways to see if hæmorrhage would be provoked. They found that no matter whether the kidney was normal or diseased, hæmorrhage was controlled by the simple application of the two cut surfaces to each other. They applied the method successfully also in two clinical cases, one in which a nephrotomy 3 cm. long and 2 cm. deep was done and one in which a small fragment of kidney tissue has been torn away in decapsulation.

The author has used the method in two cases. The first patient was a man of forty-five years who entered the hospital on account of attacks of intense pain in the left kidney. There was no calculus. Pyelography showed a slight increase in the size of the pelvis and particularly of the calyces. On exploratory operation, the capsule was found white and very thick. The classical nephrotomy incision disclosed slight flattening of the papilla. Total decapsulation was performed. The kidney did not bleed during this operation. The fatty capsule was fixed to the twelfth rib by six interrupted catgut sutures. Recovery was uneventful, and there was no secondary hæmorrhage.

The second patient was a man twenty-five years of age who complained of pain in the left kidney and hæmaturia. Roentgen examination showed a small calculus near the lower pole of the kidney. Operation disclosed adhesions, particularly at the hilum. The ureter was thick and infiltrated. After removal of the stone through a nephrotomy incision the edges of the wound were compressed against each other. However, as soon as the compression was stopped the wound began to bleed again, and it finally became necessary to suture the wound with three catgut sutures tied over pads of fat. In this case the incision was larger than in the first case. The presence of the stone did not seem to explain the difficulty in hæmostasis.

These cases show that simple compression of the lips of the wound is sufficient for hæmostasis in some cases but not in others. The author will continue to use it for small nephrotomy incisions.

In the discussion, Michon said that while secondary hæmorrhage might be caused by sutures, it will occur even without suture if the wound is infected. He believes that serious primary hæmorrhages will be more frequent if sutures are not used.

Papin agreed with Michon that sutures cannot be dispensed with in cases of large calculi or in kidneys very much deformed, but said that he regards the method as applicable to small nephrotomy wounds. He reconstructs the fatty capsule, and fixes it firmly to the twelfth rib so that if secondary hæmorrhage occurs it will be limited and operation can be done in time. AUDREY G. MORGAN, M.D.

Gruher G M The Function of the Uterovesical Valve and the Experimental Production of Hydro Ureters Without Obstruction *J Urol*, 1930 xvi 107

Hydro ureter due to partial or complete obstruction is frequently observed. Hydro ureter without obstruction is rare and has been attributed to ureteral spasm or trauma. Hydro ureter associated with incompetence of the uterovesical valve and patency of the orifices has been found in persons past middle life and has been considered congenital.

The author reports the results obtained in experiments carried out on sixteen dogs and two cats. The bladder was opened through an abdominal incision and the ventral half of the right or left intravesical ureter was incised. After a period ranging from forty five to two hundred and twenty eight days the abdomen was re opened and the bladder, ureters and kidneys were studied while the animals were still alive. They were then killed and these organs were studied further.

In all of the animals except those in which the intravesical ureter was not completely incised, two animals which probably developed infection and obstruction, and one animal in which the ureter was accidentally ligated hydro ureter resulted. To demonstrate that there was no obstruction and that the orifice was patent, the ureters and bladder were attached to mercury manometers and the intravesical pressure was increased. The curve of the pressure within the hydro ureter followed that of the bladder pressure. To prevent error, the manometers were reversed. Photographs and photomicrographs were made of the normal ureter and the hydro ureter.

In three dogs only a part of the uterovesical valve was removed. In two both of which were females there were no changes. In the third dog, a male in which one fifth of the valve remained, the valve was incompetent to high pressure and hydro ureter resulted.

Two pig bladders with hydro ureters attached were studied. The uterovesical valves were intact and there was no obstruction. The hydro ureters were the result of inflammation and oedema.

Spontaneous antiperistaltic and peristaltic contractions were demonstrated in a relatively early hydro ureter.

Draper and Braasch found one hydro ureter in experiments on ten animals seven of which were males. The examinations were made after from thirty four to one hundred and sixty three days. The hydro ureter developed in the animal which was killed at the end of one hundred and sixty three days. The difference in the results obtained in the two series may have been due to the short time allowed by Draper and Braasch. It is possible also that the valve may not have been completely cut in their experiments. Hydro ureter develops more slowly in the female than in the male because the female urethra is shorter than the male urethra.

Inflammation of the valve with thickening and oedema may permit reflux which will in time produce hydro ureter and possibly hydronephrosis. The condition of the valve may improve and if the examination is made after subsidence of the inflammation the hydro ureter will be regarded as congenital. Ascending renal infections may be readily produced by infected bladder urine.

The author draws the following conclusions:

- 1 Incision of the uterovesical valve, the intravesical ureter, in dogs produces hydro ureter.
- 2 Removal of from two thirds to three fourths of the intravesical ureter does not render the ureter incompetent to normal intravesical changes of pressure.
- 3 Meatotomy is probably a safe procedure in clinical cases.

CLAUDE D PICKRELL, M D

McGown, P F Primary Carcinoma of the Ureter *J Am M Ass*, 1930 xciv, 468

Following a review of the literature the author reports a case of papillary carcinoma of the upper third of the ureter without any evidence of metastases or implantation along the ureter such as frequently occurs in papillomatosis of the kidney pelvis. The patient was practically symptomless and gave no history indicative of pyelitis or urinary infections. Repeated roentgenograms of the kidney, ureter and bladder eliminated stone. The ureter was free from kinks as far as the catheter reached, and the kidney was of normal shape. There was no history of tuberculosis. The bladder mucosa was clear. Ureteral catheterization produced free hemorrhage such as would not be expected from the manipulation of a kink or stricture.

The treatment in most cases of primary carcinoma of the ureter has been nephro-ureterectomy. Involvement of the ureteral orifice necessitates the removal of a surrounding portion of the bladder wall. Papin resected the ureter and joined the severed ends by circular suturing but such repair is liable to stricture formation. Legueu advised resection followed by implantation of the central end into the bladder if possible. As papillomatous tumors are prone to metastasize by implants below the original level the author believes that total ureterectomy should be done.

C TRAVERS STEPHAN, M D

## BLADDER, URETHRA, AND PENIS

Vintil V, and Constantinesco N N Cystitis Secondary to Non Bacillary Kidney Lesions—Renal Cystitis (Les cystites secondaires aux lésions rénales non bacillaires—cystites rénales) *J d urol méd et chir* 1930 xciv 113

Cystitis originating from the kidney is caused and kept up by a kidney disease such as pyelonephritis, lithiasis, hydronephrosis, or tuberculosis. In renal tuberculosis it may be the only sign the bacilli having passed through the kidney as though a filter without causing renal lesions. As pyelonephritis is increasing in frequency, cystitis due to this

condition may be expected to become more common. It is more frequent in women than in men as pregnancy is one of the factors in its causation.

In the course of kidney diseases, suppurative or non suppurative, the bladder may react through a reflex route without any anatomical changes (reflex cystalgia). This reaction is brought about by the inferior mesenteric ganglion which transmits the irritation from the diseased kidney to the bladder. In suppurative kidney lesions, cystitis is produced by the intermittent or continuous discharge of bacteria into the bladder. In some cases the diagnosis of this form of cystitis is made from the co-existence of cystitis and kidney symptoms. When there are no kidney symptoms, it requires special examinations such as cystoscopy followed by catheterization of the ureters, pyelography, and possibly the inoculation of guinea pigs.

The diagnosis of the kidney disease cannot be made from the bladder lesion. One and the same kidney disease may cause bladder lesions varying in nature and intensity.

The prognosis depends upon the treatment. As soon as the kidney disease is cured the bladder lesions heal quickly. Ordinary lesions are not so destructive as tuberculous lesions. The treatment is that of the kidney lesion and may be medical or surgical. The surgical procedure may be nephrectomy, nephrotomy, or nephrolithotomy. Any persistent or recurrent cystitis which is not cured by ordinary treatment should be suspected of being renal in origin.

ANDREW G. MORGAN, M.D.

Young, H. H. The Treatment of Certain Vesical Neoplasms by Intravesical Resection of the Entire Bladder Wall with the Peritoneal Coat. *J. Urol.*, 1930, xlii, 269.

The author describes a new procedure for resecting tumors situated fairly well down on the posterior wall of the bladder and not involving the vertex. The usual intraperitoneal resection is often unsatisfactory because of the difficulty in reaching the peritoneum in the deepest part of the pouch of Douglas and the bladder below that point. The operation performed by Young is an intravesical resection of the entire wall with the peritoneal coat. The bladder is opened in the median line and the growth and adjacent bladder tissue are resected with the overlying peritoneum, the peritoneum being opened after the entire posterior bladder wall has been cut through. The technique of the operation is described in detail. The seminal vesicles can also be resected if they are found involved. Because of the interposition of the two layers of Denonvilliers' fascia there is no danger of injury to the rectum. Little difficulty is experienced in avoiding previously bougied ureters. In the female, the bladder may be closed tight and drained by a self retaining mushroom catheter, in the male, suprapubic drainage is established.

The author finds this technique more satisfactory than the so called mobilization technique as it gives

a better view of the deeper portions, it prevents injury to important vessels, it is followed by better bladder functions, and it is associated with less danger of infection.

MAURICE I. MELTZER, M.D.

## GENITAL ORGANS

Dossot, R. Cancer of the Prostate, Its Origin and Extension. *J. Urol.*, 1930, xlii, 217.

Pathological studies show a relationship between prostatic adenoma and carcinoma. Years ago this relationship was emphasized by Alharran and Halle. Of the cases of prostatic adenoma reviewed by the author, 11.6 per cent showed malignant change.

Pathologically, prostatic cancer is of two types: (1) the urethroprostatic adenoid cancer, which develops from adenomatous glands of the prostatic urethra, and (2) true cancer of the prostate, which develops from the prostate itself. The latter may co-exist with an adenoma. The author states that it is easy to find the transition points between epithelioma and adenoma if multiple sections are studied.

In 134 cases of primary carcinoma of the prostate there were 61 urethroprostatic adenoid cancers, 46 true cancers of the prostate, 17 adenomata suspected of degeneration, 6 probably true cancers co-existing with an adenoma, and 13 cancers the nature of which is not specified. Cancer and adenoma are associated in 58.7 per cent of the cases.

Urethroprostatic adenoid cancer is a true entity characterized by a long phase of benign tumor with a short phase of malignant tumor. Carcinoma of the prostate spreads and invades adjoining tissues by way of the lymphatics or the blood vessels. Among the parts invaded are the seminal vesicles, the bladder, the rectum, and the cellular tissue of the bony pelvis. Infection is almost always present in the kidneys and ureters. Involvement of the lymphatic glands is frequent and extremely important because it is the greatest obstacle to the radical treatment of carcinoma of the prostate. The glands most frequently involved are the ilio-pelvic glands (hypogastric, primary iliac, and external iliac group) and the abdominal glands (pre-aortic, retro aortic, precaval, and retrocaval). The inguinal glands were affected in only 3 of the cases reviewed. Cancerous glands are enlarged and hard and have a homogeneous aspect.

Metastases to the bones are rather frequent in carcinoma of the prostate. The bones affected, in decreasing order of frequency of involvement, are the vertebral column (lumbar portion), the bones of the pelvis, the long bones, the skull, and the ribs. Bony metastases were first completely studied by Thompson and then by Recklinghausen. Bumpus found them in 30 per cent, and Herbst and Thompson found them in 33 per cent of cases. Visceral metastases are uncommon.

Important conclusions to be drawn from Dossot's article are the following:

Prostatic cancer extends very rapidly to the nearby organs.

Only when treatment is given in the earliest stage is there any chance of a successful outcome. The best results are usually obtained when a prostatectomy is done for adenoma in which a histological section reveals areas of cancer cells. When cancer is suspected from the findings of a biopsy the disease has already spread too far.

Prostatectomy is a true prophylaxis of cancer. Radium therapy has not fulfilled expectations; only part of the gland is treated; the course of the disease is hastened.

Radical prostatectomy by the Young technique has a high mortality and is often followed by urinary incontinence; its late results are very mediocre, a cure lasting more than five years being the exception.

The results of combined surgery and radium irradiation are not encouraging.

Entirely palliative measures are advisable—passage of sounds, bladder irrigations, and, if urinary retention ensues, cystostomy. Legueu states that he has entirely given up prostatectomy and partial operation when the final diagnosis of carcinoma has been established. At the conclusion of this article there is a rather curious rejoinder by Young and Colston to Dosset's statements regarding the Young operation.

MAURICE I. MELTZER, M.D.

**Tamponade After Prostatectomy** (*A propos du tamponnement après la prostatectomie*)  
*J. d'uról. méd. et chir.* 1930 xxix 137

Some surgeons say that tamponade does not prevent hemorrhage after prostatectomy, but the

author maintains that it has a decided hemostatic action and that anyone who claims that it does not has failed to apply the tampon properly. If the tampon is not introduced very carefully, it slips into the bladder and in that event, of course, does not control the hemorrhage from the bed of the prostate.

While tamponade may cause painful contractions of the bladder necessitating the use of pantopon to stop the pain, such contractions sometimes occur in the bladder without tamponade because of the clots which form in the prostatic cavity. Moreover, in some cases tamponade does not cause contractions. When in infected cases, the tampon causes a rise of temperature from retention back of it, the author removes it a little earlier than usual. Removing the tampon is of course painful, but if an injection of morphine is given an hour before, it is generally very well borne. If removal causes a secondary hemorrhage, the insertion of another tampon may be necessary. In spite of its disadvantages the author will continue to use the tampon because he has found the course to be much better in cases with tamponade than in those without it.

He folds a piece of iodoform gauze about 50 cm. long until he has a layer of from eight to ten thicknesses about 4 cm. wide. He fixes to this firm silk suture material and inserts it with a forceps half in the bladder and half in the bed of the prostate. He then packs it carefully into the prostatic cavity until the cavity is entirely and firmly filled and none of the gauze projects into the bladder. He generally leaves the tampon in until the sixth day, but removes the large prostatectomy tube at the end of forty-eight hours, substituting for it one of his No. 40 tubes.

AUDREY G. MORGAN, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

D'Istria, A Erosion of the Vertebrae by Aneurism  
(Usure vertebrali da aneurisma) *Radiol med*,  
1930, xvii, 1

Both the clinical and the roentgen diagnosis of aneurism of the aorta is often extremely difficult. A sign of great aid is erosion of the vertebrae by the aneurism. As a rule several vertebrae are eroded and the general outline of the erosion is round. The erosion is most marked at the centers of the vertebrae and shows a tendency to spare the intervertebral disks and the thin covering plates of the vertebrae. There are no changes of structure in the parts of the vertebrae that are not eroded.

The author discusses the various theories that have been advanced to explain erosion of the vertebrae by aneurism and concludes from his roentgenograms that the action is mechanical. He reports five cases.

AUDREY G. MORGAN, M.D.

Mirolli, A A Sarcoma Developing from Paravertebral Traumatic Myositis Ossificans (Di un sarcoma sviluppatosi da una ossificazione muscolare traumatica paravertebrale) *Arch ital di chir*, 1930, xiv, 398

The case reported was that of a workman thirty-one years of age who fell violently, upon his back. The injury caused a large hemorrhagic effusion to the right of the spines of the lower six thoracic vertebrae, an area which had previously been normal. A year later a plum sized painless tumor appeared in this region. The neoplasm remained stationary for three years and then began to enlarge, attaining the size of a lemon within several months. It was hard and not tender, and was situated in the deep paravertebral muscles to the right of the eleventh and twelfth dorsal spines. The roentgenogram showed it to be irregularly opaque and not connected with the vertebrae.

At operation, the tumor was found to be well encapsulated and to lie in the longissimus dorsi and multifidus spine muscles. It was dissected out. Centrally, it was white and bony hard and showed the histological structure of spongy bone. There was no cartilage. Peripherally, it was grayish and softer and its histological appearance suggested active proliferation. The nuclei were irregular and rich in chromatin. Vessels were numerous. There were areas of degeneration and calcification.

The author reviews the various theories that have been advanced regarding the pathogenesis of myositis ossificans. He believes that hemorrhage from trauma results in the formation of young connective tissue which forms bone by metaplasia. He states

that Tubenthal and Soleri have each reported a case in which a neoplasm developed in traumatic myositis ossificans. Mirolli believes that in his case the rapid growth of the tumor and the histological findings justify the diagnosis of sarcoma developing on the basis of traumatic myositis ossificans, and that this is the third such case to be reported.

C. D. HAAGENSEN, M.D.

Rogers, H A Case of Solitary Plasma Celled Myeloma *Brit J Surg*, 1930, xvii, 518

The case reported was that of a man thirty-four years of age who broke his right femur with little or no violence and was treated for an uncomplicated fracture. About a month later he sustained an injury to the fractured leg which produced swelling. Six months later there was a large fusiform swelling firmly attached to the bone which showed a honey-combed appearance in the mass of callus uniting the fracture. At operation, the mass was scooped out. Ten days later, radium needles (150 mgm) were inserted into the cavity and left in place for a day. The wound continued to discharge. Four months later a second operation was performed and radium was used for two days, but the discharge and pain continued. Six weeks later, at a third operation, plaster of Paris was placed in the cavity. A month later amputation was done.

The growth was found to be composed of cells morphologically identical with the plasma cell of subacute inflammation and seemed to bear no relation to generalized myelomatosis. The author states that while multiple myelomata of the plasma type are comparatively common, cases showing a solitary focus appear to be rare. He defines the myeloma as a new growth which arises in the bone marrow and occurs most frequently in the long bones.

Rogers believes that the large dose of radium used in his case brought about radium necrosis which prevented not only recurrence of the tumor but also the normal reparative process.

ROBERT V. FUNSTON, M.D.

Mandl, F Regeneration of the Interarticular Cartilage of the Human Knee (Regeneration des menschlichen Kniegelenkzwischenknorpels) *Zentralbl f Chir*, 1929, p. 3265

The author reports two cases of chondromalacia of the patella in which, following a cartilage operation, a second arthrotomy was done because of the persistence of symptoms. In both, the second operation disclosed a delicate structure which resembled an interarticular cartilage in form, structure, and position, and grew from the joint capsule toward the lumen of the joint. In the second case, in which the symptoms were caused by a thick articular band



Union took place in the usual time. Anti syphilis treatment was not given. The patient could not be traced after he was discharged as he returned to Africa.

The second case reported was that of a young man who sustained a fracture of the humerus while he was exercising on the horizontal bar. He felt his arm crack and then fell. The upper third of the humerus was found to be greatly thickened by a cyst. The fracture occurred at the juncture of the upper and middle thirds. There was nothing significant in the patient's history. Syphilis was denied.

When the cyst was opened it was found to be unilocular and to lack a cellular lining. Its contents were serosanguineous. Complete union of the fracture occurred in twenty eight days. Examination six months later revealed slight thickening of the upper third of the humerus. There was no pain. The shoulder and elbow joints were normal and there was no amyotrophy. A roentgenogram showed a regular fusiform callus and obliteration of the medullary cavity.

FLORENCE A. CARPENTER

**Ludloff** Another Successful Plastic Operation on the Crucial Ligaments of the Knee Joint (Weitere Erfolge der Kreuzbandplastik des Kniegelenks) *Zentralbl f. Chir.*, 1930, p. 53.

The case reported was that of a man twenty five years of age who had suffered an injury to the knee joint five years previously. The injury at first caused marked pain and swelling. Subsequently there was a persistent disturbance of the function of the joint.

When the patient was examined by the author the subluxation phenomenon (knee joint action) could be elicited. At operation, the pre operative diagnosis of detachment of the anterior crucial ligament from the tibia was confirmed. The ligament was markedly shrunken. The plastic operation described by Ludloff in 1927, in which a silk ligature enveloped in a fascial strip is substituted for the crucial ligament was done. The artificial ligament was inserted through holes bored in the condyles of the femur and tibia in the direction of the normal course of the crucial ligament.

Healing occurred by primary intention. In the subsequent manipulations of the joint great care was used. At the time of this report eight weeks after the operation, function of the joint was already normal. There was no restriction of motion, and subluxation could no longer be elicited.

In the discussion JUENGLING (Stuttgart) reported that he had used Pethes' operative technique several times with good results. In this procedure the crucial ligament is fastened back with a wire suture. In other forms of crucial ligament injury, such as those in which the ligament is lacerated but is not torn from its attachment, the method is less useful. In one such case, Juengling replaced the ligament which had almost entirely disappeared by a loop of wire. Five months later there was a recurrence, at least, the subluxation phenomenon

could be elicited both actively and passively. In the operation for resection of the joint which was then performed it was found that the wire had healed in smoothly, had not produced any signs of irritation, and was as tensely stretched as ever. The cause of the subluxation was therefore uncertain. However, this was not strange as subluxation may occur even in the presence of an intact crucial ligament. The patient has a claim for disability compensation. Juengling states the mental make up of the patient will have an effect on the results of treatment. In this connection he cites the cases of two members of one family who were cured of habitual luxation of the shoulder by psychotherapy.

E. WILMS (Z)

## FRACTURES AND DISLOCATIONS

**Benassi E.** Experimental Detachment of the Epiphysis and Rachitiform Changes Produced by Strontium (*Distacchi epifisari sperimentali e alterazioni rachitiformi da stronzio*) *Chir. d'organi da movimento*, 1930, XIV, 397.

The author found that in young growing rabbits strontium poisoning causes histological and roentgenological changes in the bones very similar to those occurring in rickets.

Non operative experimental detachment of the epiphysis at the upper end of the tibia in young growing rabbits always takes place in the cartilage, generally in the dentate zone and less frequently in the vascular juxta epiphyseal layer. When left to itself the detached fragment soon consolidates again, no immobilizing apparatus being necessary for union. In a few days the roentgenogram of the injured side differs from that of the other side only in showing a slightly wider joint fissure. Soon even this difference disappears. The injured bone is never shortened and its growth is equal to that of the corresponding bone on the other side. Neither histological nor roentgen examination shows complete or incomplete ossification of the cartilage. The cartilage soon resumes its function, and development is normal.

The rachitiform changes produced by strontium are more marked on the side on which detachment of the epiphysis has occurred. Treatment with strontium very evidently affects healing of the detached fragment, causing it to occur more irregularly and rapidly and with the formation of exuberant callus.

AUDREY G. MORGAN, M.D.

**Demel R.** The Operative Treatment of Fractures (*Die operative Frakturbehandlung*) *Beitr. z. Klin. Chir.*, 1929, cxlviii, 147.

The chief purpose of this report is to show that the limits of the operative treatment of fractures have been restricted since it has become recognized that the functional result does not depend absolutely on the position of the fragments and that it is not possible to determine in every case whether operative or non operative treatment will be best. Non opera-

tive treatment has been considerably advanced by a study of the mechanics of the muscles in reduction and by the development of extension procedures "The field of its application increases with increasing experience of the surgeon."

Of 5,095 cases of fracture treated at the von Eiselsherg clinic during the last five years, only 147 (2.8 per cent) were operated upon. With few exceptions, it is justifiable to attempt non operative treatment first. Operative treatment is indicated only when non operative treatment has failed. Nevertheless, the indications for operative treatment are sufficiently numerous. The general indications include crushing fractures, fractures associated with injuries of blood vessels or nerves or the interposition of soft parts, threatening bridging callus, certain separations of the epiphyses, isolated joint fractures, malunited fractures, and pseudarthroses. The special indications are depressed fractures of the vault of the skull, vertebral fractures with transverse paralysis, isolated luxation fractures, avulsion fractures, many fractures of the forearm, and certain fractures of the neck of the femur. Operation is best performed at the end of the first week. An attempt should be made to change open fractures into closed fractures by treatment of the wound.

The author reviews the various operative procedures, with emphasis on the advantages and disadvantages of each. He himself prefers suturing with a rustless steel wire by means of a modified Kirschner traction forceps and without soldering. Of 202 cases treated in this manner, healing by primary intention occurred in all but 1 and it was necessary to remove the wire in only 5. In no instance did the wire break. K. H. BAUER (Z)

**Lasagna, R.** Fracture of the Odontoid Process of the Axis with Anterior Luxation of the Atlas without Cord Symptoms (Frattura del dente dell'epistrofeo con lussazione anteriore dell'atlante senza sintomo midollare). *Chir. d. organi di movimento*, 1930, IV, 499

A woman twenty six years of age in coming down a ladder, caught her skirts and fell with her head flexed between the lower step of the ladder and the wall. She did not lose consciousness. After the accident she complained only of pain on moving her head and she held her head flexed forward with the neck rigid.

Examination revealed marked protrusion of the spinous process of the second cervical vertebra. Active movement of the head was impossible, and passive movements caused pain at the level of the axis. Examination of the posterior wall of the pharynx revealed nothing abnormal except pain on pressure. There was no disturbance of sensation. Roentgen examination showed a fracture of the odontoid process of the axis with moderate forward dislocation of the atlas.

A plaster cast which held the head in slight traction was applied and left on for two months. Six

months after the accident there was perfect clinical cure with no deformity and no limitation of movement. Roentgen examination revealed moderate reduction of the forward dislocation of the atlas. The outline of the odontoid process was found to be somewhat less clear than in the preceding roentgenogram, the fracture line could be seen, but there was a slightly opaque process connecting the base of the process with the anterior surface of the body of the vertebra.

Since the beginning of the roentgen era only twenty-two cases of fracture of the odontoid process with forward dislocation of the atlas have been reported. In almost all of them the fracture was caused by violent exaggerated flexion of the head. Though the condition causes scarcely any symptoms, the prognosis is doubtful because of the possible late results. A roentgen examination should be made in all cases.

The treatment is long immobilization. Attempts at reduction are absolutely contra indicated. It is generally agreed that bony consolidation does not occur, and as two months are sufficient for the formation of fibrous callus, immobilization need not be kept up any longer than that.

AUDREY G. MORGAN, M.D.

**Fairbank, H. A. T.** Congenital Dislocation of the Hip, with Special Reference to the Anatomy. *Brit. J. Surg.*, 1930, VII, 380

Fairbank's discussion of the anatomical variations in congenital dislocation of the hip is based on a study of thirty-five museum specimens (including forty-six dislocated hips), fifty open operations on this deformity (in twenty six of which the joint was opened), and a review of the literature. The specimens represented all age periods from infancy to adult life and revealed the sequence of development of various types of acetabular head, articular facets, and false acetabula. Of particular interest were the changes in the bone behind the acetabulum with the occasional formation of a facet in this spot and the ischio capsular band which forms a sling over the neck of the femur. The chief muscles which supplement the capsule are the psoas in front and the obturators and their associates behind. The author reviews the various factors which may contribute toward the characteristic gait in congenital dislocation of the hip and the causation of the pain in later life.

With regard to treatment, Fairbank discusses arthrodesis, osteotomy, the shelf operation, and excision of the head of the femur. He states that the majority of patients who are treated in early childhood are cured by the manipulative method, and that an ever increasing number of the others should be cured by open operation. He concludes that at present arthrodesis is unquestionably the best method of permanently relieving the pain, but that osteotomy is of value in a few selected cases. He believes that the shelf operation is still on trial.

ROBERT V. FURSTON, M.D.

Parcelier A., and Chenut, A. Osteosynthesis of the Diaphysis of the Femur with the Knee Flexed (*L'ostéosynthèse de la diaphyse fémorale genou fléchi*) *Reu de chir*, Par, 1929, XLIII, 563

The authors emphasize that osteosynthesis of the shaft of the femur does not give its best results unless it is performed with the knee flexed by Lambotte's method. The opponents of osteosynthesis object to it because they claim that it leaves the knee rigid and they believe it better to have a shortening of as much as 3 cm. with a flexible knee than a limb without any shortening but with a rigid joint. In reply to this objection the authors state that the rigidity is due to the technique ordinarily used in which the limb is immobilized generally in a plaster cast, after the operation, and that mobility of the knee is perfectly preserved by Lambotte's method with the knee flexed and without the use of a plaster cast after the operation. They emphasize that the osteosynthesis must be absolutely solid for if a foreign body is not solidly fixed it is very badly tolerated. The only way of fixing the fractured bone with sufficient solidity is the application of a Lambotte plate. Lambotte's plates are steel plates 14 cm. long and 1 cm. thick. A plate of this type can be used for either a transverse fracture or a very oblique fracture. It should be placed on the lateral surface of the femur if possible.

In the procedure followed by the authors the osteosynthesis is done as in other methods. When it is finished and the plate has been screwed on tight, an assistant flexes the knee beyond a right angle by sliding the heel along the table the operator watching the plate closely all the time. If there is any movement of the plate on the tissues the wound is not sutured with the knee flexed. If the plate is absolutely firm, the wound is sutured with the soft parts under tension. The patient is placed in bed and his leg immobilized with pillows, one on each side of the limb and the third on its anterior surface.

Frequently there is edema of the foot and occasionally there is pain in the heel. Sometimes even a bed sore develops on the heel. Pain in the heel and bed sores may be prevented by resting the sole of the foot on a cushion, leaving the heel free.

The day after the operation the limb is gently extended on the bed. This cannot be done without causing pain as it relaxes the sutures of the soft parts. In half an hour the limb is put back in a flexed position with the same care. The replacement can be done without causing pain. In the afternoon the same manipulations are repeated. The time during which the limb is left extended is rapidly increased until at the end of about two weeks the patient lies with the limb extended during the day, and flexed during the night or vice versa. In this way normal mobility can be brought about without any effort on the part of the patient—in fact almost in spite of him for most of the cases in which the operation is done are industrial cases and the patient is often more interested in obtaining compensation than in having normal function restored.

At the end of the first month active movements of flexion and extension are made with the foot resting on the bed. At the end of the second month the patient is told to make the movements himself while he sits on the bed with his legs hanging over. Then graduated effort is encouraged by attaching sandbags weighing 1, 1½, and 2 kgm. The patient is not allowed to attempt to walk before the beginning of the fourth month.

If osteosynthesis is performed in this way with absolute asepsis and perfectly firm fixation there will be no shortening of the limb and the normal mobility of the knee joint will be preserved. Trophic disturbances will be minimal as the surest way to limit them is early active mobilization.

The disadvantages of the method are the possibility of infection resulting in osteitis or fistula and the delay in the formation of callus. When the patient is allowed to walk it is impossible to say whether there is a solid callus or whether the solidity of the limb is due to the plate. Therefore the plate may loosen after he has walked for several days and another fracture may occur. However the possibility of a second fracture is common to all methods of osteosynthesis. The only way to avoid it is to limit the denudation of the bone to the place where the plate is to be screwed on, keep the patient from walking before the end of three months, and watch him very carefully when he begins to walk.

The authors report ten cases, with photographs and sketches showing the results.

AUDREY G. MORGAN, M.D.

Benelli G. Irreducible Traumatic Dislocation of the Knee (*Lussazione traumatica irriducibile del ginocchio*) *Chir d'organi di movimento* 1930, XIV, 439

The patient whose case is reported was a man seventy four years of age. A cart load of wood slipped from the cart he was driving and fell on his right leg. After the accident no skin lesion was found but the transverse diameter of the knee was greatly increased, the lower end of the femur protruded forward and inward, the upper end of the tibia was displaced laterally and a little backward and the tibia was rotated outward on its longitudinal axis so that the lateral condyle not only protruded outward but was in a posterior plane with reference to the inner condyle of the femur. The patella was rotated to the outside of the lateral condyle of the femur inclined laterally, and firmly fixed in the abnormal position and on the median side of the joint along the joint line there was a depression of the skin that seemed to be adherent to the underlying tissues. Active movements were absolutely impossible and passive movements were very limited and painful. Attempts at non operative reduction were unsuccessful.

Operation showed that the irreducibility was caused by a large muscle bundle from the vastus medius which was caught in the intercondylar groove and surrounded the medial condyle in the

same way as a buttonhole surrounds a button. When this muscle was lifted away from around the condyle the bones could be easily replaced in their normal position.

The postoperative course was good at first, but necrosis necessitated amputation of the leg two months after the operation. The development of the necrosis was due, not to the operation, but to the patient's age and the presence of advanced arteriosclerosis.

In a review of the literature the author was able to find only nine cases of incomplete traumatic posterolateral luxation of the knee joint which was irreducible because of the interposition of tissue. He reviews these cases briefly. He states that if the leg is flexed during the movement of abduction which causes the luxation the ligaments are lacerated obliquely from below upward and from without inward, this laceration forming a flap of ligament which is caught in the gaping joint and passes beneath the medial condyle. When the limb is extended, the flap is fixed between the femur and the tibia. The mechanism is the same whether the interposed tissue is muscle or ligament. Two characteristics of such an injury are absolute fixation of the patella and a depression in the skin beneath the condyle. The only treatment is operation. The prognosis is rather serious as complete recovery with good function resulted in only five of the ten cases reviewed, ankylosis resulted in four, and amputation was necessary in one. AUDREY G. MORGAN, M.D.

Madlener, M. J., and Paas, H. R. Patellar Fractures and Their Sequelæ with Special Regard to Arthritis Deformans (Ueber Patellarfrakturen und ihre Folgezustände, unter besonderer Berücksichtigung der Arthritis deformans). *Arch f klin Chir*, 1929, clvi, 445.

The authors have followed up sixty-one cases of fracture of the patella which were treated in the surgical clinic of the Citizens' Hospital of the University of Cologne during the period from 1919 to 1928. In eleven cases the fracture was very evidently due to a direct trauma and in three to an indirect trauma. In the others it was probably due to a combination of factors. In twenty six cases there was a purely transverse fracture. In nine of the latter, there were slight fractures of both fragments in addition. Nineteen fractures presented numerous fragments (cross-splintering and star shaped fractures). There was only one purely longitudinal fracture. In twenty six cases there was no indication of tearing of the lateral extension apparatus, but in spite of this a diastasis of 2 cm. between the fragments was found in a few instances. An effusion of blood was present in all of the cases. Puncture was done on the fourth or fifth day.

Eighteen fractures without marked diastasis were treated conservatively. The period of immobilization averaged forty eight days. Forty three fractures were operated upon because the fragments were widely separated or because there was inter-

ference with extension. The choice of operation depended upon the type of the fracture. In six cases, cerclage with catgut or silk was done, and in the others, longitudinal wire suturing through the bones. The operation was usually performed on the seventh or eighth day after the injury.

In cases of open fracture of the patella, the wound dressing was followed by lavage of the joint with rivanol. The duration of the immobilization was about the same as in the non operative treatment.

Two patients died, one of bronchopneumonia and the other of a periparticular phlegmon with general infection.

In the re-examination of thirty one patients it was found that the frequently marked deformity of the patella had no noteworthy effect on the function of the joint. Of the conservatively treated cases, function was very good in 44 per cent, good in 22.4 per cent, and poor in 11.2 per cent. Of the operatively treated cases, it was very good in 63.6 per cent and good in 36.4 per cent. The operative treatment was therefore more satisfactory than the conservative treatment. In two cases the wire suture had torn out, and in three its removal was necessitated by irritation. With the exception of an operatively treated transverse fracture, lateral fractures showed bony union.

Arthritis deformans of the knee was found in fifteen of the thirty one patients re-examined. In eight, it was present only on the side of the fracture. Whether there was any relation between the development of the arthritis deformans and the type of the fracture, the mechanism of production of the fracture, or the deformity of the patella could not be determined. It appeared that the arthritis was more frequent the greater the patient's age and the longer the time that had elapsed since the injury. Of the operatively treated cases, the incidence of arthritis was highest in those in which wire suturing had been done. The arthritis was never so severe that it affected the movement of the joint. Of the conservatively treated cases, arthritis was found in nine (55.5 per cent), whereas of the operatively treated cases, in which the injury was more severe, it was found in only 54.8 per cent. BERGMANN (Z).

Moehlmann, T. Luxations in the Region of the Foot (Luxationen im Bereich des Fusses). *Deutsche Zschr f Chir*, 1929, ccxxi, 363.

The author reviews the literature on luxations in the region of the foot from the roentgenological standpoint. He begins with luxations of the talocrural joint, which he discusses from every possible angle but with special reference to the anatomy of the joint. He then takes up luxations of the talus. These occur usually in the sagittal plane and nearly always forward. The dislocation from the grasp of the malleoli is associated with torsion about the vertical axis. Moehlmann discusses in detail the theories of Knoke and Sievers and of Kirchner concerning the mechanism by which these luxations are brought about and describes the accompanying fractures. He

states that about 25 per cent of luxations of the talus can be reduced without operation. A good result was obtained also in eight of ten cases in which operation was performed. Sometimes the talus must be excised.

A second form of talus luxation, luxation of both talotarsal joints, occurs somewhat more frequently in its uncomplicated form. The talonavicular and talocalcaneal joints form a single functional unit. The restricted mobility of this joint—only the movements of the navicular are to any extent free—explains the different types of luxation in this part. The most frequent type is one of inversion. The foot is dislocated as a whole behind the talus so that the head of the talus overrides the anterior transverse edge of the calcaneus by from 1 to 2 cm. and at the same time there is a pronounced crossing of the axes of the talus and calcaneus. The chief factor in the dislocation inward and backward is the supinatory vertical rotation of the talus on the calcaneus. Dislocation outward is very rare. In 70 per cent of the

cases reviewed reposition was easy. Luxation of the talonavicular joint is nothing more than an incomplete form of luxatio pedis sub talo. The author's discussion of luxation by inward and outward rotation is illustrated by excellent pictures.

The very rare luxations of the navicular bone and of Chopart and Lisfranc joints are described briefly.

On the basis of the anatomy of the foot, which is made up of a longitudinal and a transverse arch both of which have their support in the calcaneus, the author differentiates the following fundamental conditions: (1) distortion of the longitudinal arch in the vertical axis, (2) overstretching or flattening of the longitudinal arch, and (3) flattening of the transverse arch. Of the first type are the rotation dislocations in the joints between the calcaneus and the talus and the analogous dislocations in the Chopart joint. Of the second type is the upward luxation of the talonavicular joint. Of the third type are the isolated dislocations in the region of the cuneiform and the metatarsals.

VOGELER (Z)

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Dietrich, A., and Schroeder, K. Reaction of the Vascular Endothelium as the Basis of Thrombus Formation (Abstimmung des Gefäßendothels als Grundlage der Thrombenbildung) *Arch f path Anat*, 1929, cclxxiv, 425

The authors report results of experiments on rabbits which support the theory of a primary change in the relation between the blood and the vascular endothelium as the cause of thrombus formation. After the preliminary preparation by the intravenous injection of dead colon bacilli, they injected intravenously living strains of colon bacilli or caseosan and found an increased reaction of the vascular endothelium. This unspecific reaction directed toward specific protein substances and interpreted as a resorption function could be obtained by similar experiments in all of the active mesenchyma. It consists of increased agglutination of the bacteria, the secretion and deposition of a mucoid "phase" on the endothelium (corresponding to the fibrin deposits of Klemensiewicz), adsorption of the agglutinated bacteria to the wall, mobilization of the endothelium, and extravasation of leucocytes.

By this change in the relationship between the blood and the endothelium an increased tendency toward thrombosis is produced which, when favored by slowing of the blood stream (circulatory weakness), leads to clot formation very similar to thrombosis in man. In human diseases frequently associated with thrombosis, particularly sepsis, the authors have noted endothelial changes in the veins which closely resemble those observed in the animal experiments.

BLUMENSAAT (Z)

Alvarez, C., Fracassi, T., Cid, J. M., and Geary, E. R. Thrombosis of the Abdominal Aorta (Thrombosis de la aorta abdominal) *Rev méd d Rosario*, 1930, xx, 1

A man forty years of age came to the authors with intermittent claudication which had begun a year and a half previously. Six months after the beginning of the claudication, difficulty in speech developed. Both conditions had progressed slowly.

Examination disclosed signs of obliterating endarteritis of the legs, a pseudohulnar syndrome, very high arterial pressure, arteriosclerosis of the accessible arteries, and a systolic murmur in the epigastrium with propagation downward. There was no pain, palpable tumor, evidence of involvement of the kidneys, albuminuria, retention of urine, or change in the condition of nutrition. The patient gave a history of syphilis and his Wassermann reaction was positive. In the course of the year and three months during which he was under observation

the symptoms slowly increased. Ultimately, cerebral symptoms began and death resulted in a few days.

Autopsy showed generalized arteriosclerosis with great hypertrophy of the left ventricle, nephrosclerosis, sclerosis and emphysema of the lung, a calcified thrombus in the terminal part of the aorta which almost completely occluded the vessel, and secondary lesions in the form of an old infarct of the myocardium and hemorrhage and softening of the brain. The syphilitic nature of the process was shown not only by the clinical history and the intensity of the lesions in so young a man, but also and chiefly by their intensely proliferative nature. In some of the arteries the proliferation of the intima was so intense that it formed a bridge which crossed the lumen. These lesions explained the claudication picture. The intermittent claudication was due chiefly to the thrombosis of the aorta which almost completely obstructed the lumen of the vessel and was propagated to the external iliac, femoral, and posterior tibial arteries on the left side. There was no pulsation of the arteries on the left side. The pseudohulnar syndrome was due to the arterial lesions in the brain, but the latter did not explain the cerebral symptoms just preceding the patient's death. The hypertrophy of the left ventricle was caused by the permanent high pressure. In the authors' opinion, the stenosis of the aorta was of only secondary importance in causing the high pressure as pressures equally high and continuous are often present in the absence of stenosis of the aorta. The pulmonary lesions and the infarct of the myocardium did not cause any clinical signs.

Aside from the rarity of the condition, this case is of interest because of the fact that such a complete thrombosis of the terminal part of the aorta produced such slight symptoms that, except for accidental discovery of the murmur, it could not have been distinguished from an ordinary case of intermittent claudication. It shows that intermittent claudication may be caused by thrombosis of the aorta as well as by obliterating endarteritis and lesions of the spinal cord.

AUDREY G. MORGAN, M.D.

## BLOOD, TRANSFUSION

Kaboth. The Transition of Blood-Group Antibodies from the Mother to the Fetus (Der Uebergang der Blutgruppenantikörper von der Mutter auf die Frucht) *Arch f Gynaek*, 1929, cxxxvii, 727, 752

It was established in previous investigations that in a certain percentage of cases agglutinins are demonstrable in the blood of the umbilical cord. This

finding depends upon the blood group. No transfer of antibody occurs in the group combinations A B, B A, A AB, or B BA. It is therefore evident that the placenta has an elective permeability for the different blood group antibodies.

The author has found that the content of agglutinins is considerably less in the blood of the umbilical cord than in the blood of the mother. His investigations demonstrated also that in the retroplacental blood the findings are at times ambiguous. Because of this fact he believes that there may be a retroplacental mixing of the two bloods so that when the bloods of the mother and fetus are of different groups an absorption of the maternal agglutinin takes place. An admixture of fetal blood in the retroplacental blood, although slight, was demonstrated by him in studies of the maternal blood and the blood of the umbilical cord during abdominal caesarean section. In the blood of the umbilical cord there were no agglutinins even in the cases of children of Group O. On the other hand, the agglutinin was found in the placental part of the cord fifteen minutes after the cord was clamped off.

Kaboth emphasizes that a decrease in the agglutinin occurs only in the area of contact of the two bloods and never in the venous blood. Therefore the venous blood of the pregnant woman is best for the determination of the blood group.

KESLER (G)

Aubertin C. and Fleury J. Syphilis After Blood Transfusion (Syphilis apres transfusion sanguine). *Bull. et mém. Soc. méd. d'hop. de Par.* 1930 xlv, 69.

The authors review the literature on syphilis after blood transfusion and report a case. The case they report was that of a man thirty four years of age who received five transfusions fifteen days apart for extreme anaemia (erythrocytes 1 550 000, hæmo-

globin 22 per cent) which had not been helped by liver therapy. The donor was the patient's brother in law. Following the first two transfusions the erythrocytes showed a slight increase but thereafter they decreased progressively in spite of the transfusions.

When the authors first saw the patient, he showed no purpura but presented an eruption of typical papular and papulo-squamous syphilids. The syphilids were scattered over the entire body, but were especially numerous on the forehead, the palms of the hands and the soles of the feet. There were no macules. The tonsils showed a white streak, but the mucous membranes elsewhere were free from eruption. The cervical, inguinal, and subepitrochlear glands were discretely enlarged. The spleen was palpable on deep inspiration.

The eruption had appeared from fifteen to twenty days previously, about sixty five days after the first transfusion. The patient and his family physician had ascribed it to digestive disturbances consequent on the liver feeding. Serological reactions (Hecht, Wassermann, Calmette, and Kahn) were frankly positive. About five days before the appearance of the eruption and exactly two months after the first transfusion the Wassermann reaction had been negative. The patient insisted that he had had sexual relations only with his wife. The brother in law who gave the blood stated that he was well and that he had a negative blood reaction four years previously and also when a test was made at the time of an attack of gonorrhoea. He refused examination but, with difficulty, blood was obtained for a test. The results were frankly positive with various methods. The patient was given cautious anti-syphilis treatment and three transfusions of blood from different donors, but died about a month later. Autopsy was refused. FLORENCE A. CARPENTER.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Ewald, F. The Proper Time for Operations in Childhood (Ueber den geeigneten Zeitpunkt fuer Operationen im Kindesalter) *Muenchen med Wchnschr*, 1929, II, 1708

The author's observations are based on his own experience, that of the Munich Pediatric Clinic, and that of the Ombredanne Pediatric Clinic in Paris

Ewald states that in childhood, more than in adult life, the patient's age and strength, anæsthesia and its psychic trauma, and the loss of blood are important factors in the results of operation. Moreover, in the cases of children it is necessary to consider the small size of the individual parts, a factor of special importance in cosmetic operations

In the cases of infants, operation is occasionally followed after a few hours by a high rise in the temperature, convulsions, and death and no cause for death can be demonstrated at autopsy. Such sudden deaths are to be attributed to the effect of shock, an endocrine disturbance, or anaphylaxis. The author calls attention to the fact that in children recently operated upon milk may have a toxic effect and produce anaphylactic conditions. Therefore milk should be withheld for at least twenty-four hours.

As in the first half year of life every operation is particularly dangerous, it is advisable to delay surgical intervention which is not absolutely necessary until the child is older. However, congenital atresia of the anus must be relieved at once. In spina bifida, the indication for operation depends upon the absence of paralysis. Operation is of avail only when paralysis is absent as in the other cases death soon results whatever treatment is given.

In cases of harelip causing no difficulties in feeding, operation should be delayed as the cosmetic result will be better if it is done after the child is six months old. Harelip of the third degree should be operated upon early, preferably between the sixth and eighth weeks of life. The best time for operation for cleft palate is at the end of the second year. At this stage of life the sutures hold well, and the soft parts, especially the soft palate, can be approximated much more easily than later.

In cases of inguinal hernia, operation should be delayed until the second year of life if possible, it is indicated earlier only when incarceration or some other complication develops. Umbilical hernia should be operated upon in the second year.

The operation for phimosis can be performed very early as it is only a slight intervention. Operation for hydrocele should be delayed until the second year, and operation for hypospadias until the eighth to the twelfth year.

Club foot should be corrected in the first few weeks of life, whereas dislocations of the hip joint should be corrected in the second year.

Angiomata should be removed as soon as possible. In cases of torticollis, corrective exercises should be started at once. If they are not successful, operation may be undertaken in the second year.

In pyloric stenosis, surgical treatment should not be delayed too long. If improvement is not noted soon under internal therapy, operation is indicated as its results are favorable when a good and rapid technique is used.

In invagination, which is not rare in infancy, operation should be performed at once.

Appendicitis is uncommon in the first two years of life and its diagnosis at that age is not always easy. Early operation is desirable because, in the child, inflammatory processes often become worse very quickly. Appendicitis must be differentiated from ascariasis, pneumococcus peritonitis, and tuberculosis.

Foreign bodies in the œsophagus and trachea must be removed as soon as possible. In caustic injuries of the œsophagus a bougie should be passed within the first few days.

Conditions of the urogenital tract occurring in childhood include congenital hydronephrosis and adenosarcoma.

In cases of undescended testicle it is desirable to operate before the onset of puberty. The best time for operation is about the tenth year. Only when pains are produced by the inguinal testis should intervention be done earlier.

In rachitic deformities of the bones, general treatment should be tried first. If corrective operation is necessary, it should be undertaken before the school period, at about the third or fourth year of life. In osteomyelitis, operation should be performed as soon as possible.

In empyema of the pleura in children, puncture and aspiration usually do not lead to a cure, as a rule, a thoracotomy must be done later. The prognosis is usually quite favorable.

In stenosis of the larynx, intubation is preferable to operation.

Gonitis in childhood usually do not require surgical treatment.

VON TAPPEINER (Z)

Vollmann, J. Pre-Operative Preparation and Postoperative Treatment, Including Blood Transfusion (Vorbereitung und Nachbehandlung bei Operationen, einschliesslich Blutuebertragung) *Zentralbl f. Chir.*, 1929, p. 2523

In a comprehensive report the author reviews the advances that have been made in recent years in the preparation of patients for operation and their



postoperative treatment. The article is supplemented by an extensive bibliography.

Attention is called to the so called "physiological" surgery, in which special consideration is given to the ability of the body to react before and after operation, the destruction of protein after operation, changes in the temperature and the number of the blood platelets, the sedimentation rate of the erythrocytes, and the development of acidosis. For the prevention and treatment of acidosis, glucose and sodium bicarbonate are recommended. Before an operation the urine should always be examined for acetone. If acidosis is present or is suspected the loss of water caused by energetic purgation should be avoided.

With regard to the heart and circulation, Volkman says that routine digitalization is inadvisable. Cardiac and circulatory disturbances should be treated according to the requirements of the given case. Persons of the hypertonic type react well to digitalis. Next to preparations of the nature of digitalis in such cases the intravenous administration of glucose is recommended. The significance of electrocardiograms as regards operative intervention is still doubtful. The author recommends Kauffmann's test for latent edema and regular determinations of the blood pressure.

With regard to thrombosis and embolism, Volkman cites the reports of de Quervain who found emboli in 0.45 per cent of a large number of cases in which operation was done. In two thirds of these cases there was a septic condition. Of 2,900 cases in which Freund administered thyroid gland tablets before operation to prevent thrombosis and embolism embolism occurred in only 2 and thrombosis occurred in none. In the Voelcker clinic, 6 drops of thyroxin are given daily from the second to the twelfth day after operation. In nearly half of all cases of postoperative pleurisy the condition is to be attributed to small emboli.

As yet no certain method of preventing postoperative lung complications has been discovered.

For the relief of postoperative retention of urine, the intravenous administration of urotropin is recommended.

In cases of postoperative mental disturbances it is necessary to distinguish between disturbances due to organic changes in the brain, disturbances due to toxicoses, and insufficiency psychoses.

In the preparation of patients with Basedow's disease with Lugol's solution it is difficult to determine whether the condition is due chiefly to changes and disturbances in the cells themselves or to influences of the sympathetic.

With regard to the pre-operative preparation of patients with cancer of the breast by roentgen irradiation, the author states that some of the poor results as regards healing are due to changes produced in the blood vessels in the area irradiated.

Blood transfusion is discussed in somewhat greater detail. Emphasis is placed on the necessary tests, previous examinations, and apparatus. The author

prefers the Oelecker apparatus. He urges care in the re-infusion of blood obtained from a torn liver and mixed with normal. To prevent accidents he recommends the intravenous injection of calcium chloride solution. He states that the importance of blood transfusion to replace blood, hasten coagulation and stimulate hematopoiesis is generally recognized. Hook (2)

**Popper, H. L.** Investigations on the Prevention of Postoperative Thromboses and Embolisms by the Feeding of Thyroxin (Unter suchungen ueber die Verhinderung postoperativer Thrombosen und Embolien durch Thyroxinfuetterung). *Mfd. A. A. N.*, 1929, 11, 1660.

The problem of the prevention of postoperative thrombosis and embolism has become a subject of great interest as statistics from many sources show increasing frequency of these conditions. As in experiments on animals it has been found that the formation of thrombi is considerably delayed by the influence of thyroxin, and as thyroid preparations have frequently been given in clinical cases for the prevention of thrombosis and embolism after major operations the author has made a careful follow up of the results of such treatment.

He found that in 150 cases treated with synthetic thyroxin fatal pulmonary embolism occurred in 1 and thrombophlebitis in 3. In 150 untreated cases thrombophlebitis developed in 4 and there was no instance of embolism or pulmonary infarction. One milligram of thyroxin was given 3 times daily in these cases.

In 50 cases which were treated with "thyropurin" thrombophlebitis developed twice and a non fatal pulmonary embolism once. In the 50 control cases there was 1 instance of fatal pulmonary embolism and 1 case of thrombophlebitis. In some of the cases treated with thyropurin, symptoms of hyperthyroidism developed.

As a prophylactic effect of the feeding of thyroxin could not be proved, the author rejects the feeding of thyroid preparations for the prevention of postoperative thrombosis and embolism. ZWERC (2)

**Knobloch, J.** The Importance of the Vital Capacity of the Lung in the Development of Postoperative Pulmonary Complications (Ueber die Bedeutung der Vitalkapacitaet der Lungen fuer das Entstehen postoperativer Lungenkomplikationen). *Acta chirurg. Scand.*, 1930, LXVI, 92.

The author attempted to determine whether, by functional tests of the lung, it is possible to obtain any preliminary information as to the liability of a patient to develop postoperative pulmonary complications. He tested the vital capacity of eighty patients prior to operation. The results indicate that when the vital capacity of the lung is reduced the incidence of postoperative pulmonary complications and the postoperative mortality increase, and that the liability to develop postoperative complications of the lungs is due to constitutional factors.

Melchior, E. Contributions on Postoperative Treatment I Postoperative Gastro-Intestinal Paresis and Atony (Beiträge zur Nachbehandlung nach Operationen I Die postoperative Magen-Darmparese und -Atonie) *Chirurg*, 1929, 1, 1198

The treatment of postoperative gastro intestinal paresis presents a typical problem of after treatment as a certain predisposition to its development is quite common, especially after laparotomies. When the disturbance occurs first in the intestine, it is manifested by failure of the passage of feces and gas and increasing flatulence. In the more severe cases there may be symptoms of a pronounced ileus with regurgitation of air, bile, and the contents of the small intestine. If paresis of the stomach and duodenum is dominant it is manifested by increasing distention of these organs and massive bilious vomiting. The author calls attention to the fact that disturbances of innervation of the gastro intestinal tract are not of a purely motor character but are complicated and usually characterized chiefly by a massively increased secretory flow.

With regard to the prevention of these conditions, Melchior states that the formerly common practice of preparing the patient for operation by energetic purgation and fasting, procedures which inhibit the motor function of the intestine, is being followed less frequently today. The greatest possible limitation of the anæsthetic and conservatism in surgery are additional prophylactic measures now employed.

After operation, especially after severe abdominal interventions, fluids by mouth should be withheld until the evening of the day of the operation and should never be given before the postoperative vomiting or marked belching has ceased. After operations on the stomach, their administration by mouth should be delayed still longer. To meet the demand of the body for fluids during this period it is best to give drop enemas which, at the same time, effectively stimulate peristalsis. Another measure frequently used is heating of the abdomen with the arc light or thermophore. The effect of this procedure is increased by the insertion of an intestinal tube from time to time. Better than the drop enemas and intestinal tube are the true enemas, the effectiveness of which may be considerably increased by the use of a glycerin and milk syrup. In the more severe cases of paresis, purgatives given by mouth are useless as they are vomited. All the more urgent, therefore, is the need for substances that stimulate peristalsis in a parenteral manner. The author briefly reviews the drugs usually employed. He believes that the most suitable is an extract of the posterior lobe of the pituitary gland in the form of hypophysin or pituglandol. He gives 1 c cm intramuscularly or 1 c cm diluted in 20 c cm of physiological saline solution or a 2n to 5n per cent glucose solution intravenously to obtain a more lasting effect. These organic preparations not only affect the gastro intestinal canal, but have a tonic action on the general circulatory system

which closely resembles the prolonged effect of adrenalin. In the treatment of postoperative gastro intestinal paresis special attention should be paid to the circulation.

In the presence of considerable atony, especially when frequent belching or vomiting occurs, the stomach tube should be used to determine whether the stomach is filled with regurgitated fluid. If it is found to be so filled, the attempt should be made to empty it by siphonage or lavage. It has been found beneficial also to allow the patient to assume either the knee elbow posture of Schnitzler or at least the abdominal or lateral posture. In the use of the abdominal or lateral posture the foot of the bed should be raised by supports. If it is impossible to keep the stomach permanently empty in this way, the lateral posture should be supplemented by continuous drainage with a stomach or duodenal tube. The final resort is the formation of a fistula of the small intestine. This may be used both for drainage of the stomach and for feeding. ZILLNER (2)

#### ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Cardia, A., and Peretti, G. The Effect of Moist Heat on Healing by First Intention and on the Reticulin Endothelial Reaction (Azione del caldumido sui processi di cicatrizzazione per primam cum riguardo anche al sistema reticolo endotheliale) *Ann. ital. di chir.*, 1930, 1x, 47

The authors report experiments on dogs in which hot moist dressings were applied to wounds to determine their effect on healing. Macroscopically, the scars of the wounds treated with moist heat were more regular in form, smaller, and more linear than those treated by other methods. Microscopically, the wounds treated with moist heat showed a more intense reaction at first, but the initial reaction passed off sooner and repair was completed sooner than in wounds treated by other methods, giving a tissue that was more nearly normal anatomically.

The reticulo-endothelial cells were more numerous at first in the wounds treated by moist heat, but later they were fewer and they disappeared sooner than in the other wounds.

AUDREY G. MORGAN, M.D.

Sas, L. The Bacterial Content and Treatment of Accidental Wounds (Ueber den Keimgehalt und Behandlung der akzidentellen Wunden) *Zentralbl. f. Chir.*, 1929, p. 2952

The author considers it essential in the study of the bacterial content of a wound to obtain the inoculating material by means of wisps of sterile silk instead of with the platinum loop since with the latter only the bacteria on the surface will be obtained. In fifty five cases of accidental wounds he was able to culture sixty-six strains of pathogenic bacteria. The Fraenkel-Welch bacillus was found with great frequency. In the cases which had been treated previously with antiseptics the cultures

were just as exuberant as those obtained from the untreated cases. Most of the wounds healed by primary intention without the use of antiseptics. Guinea pigs artificially infected with the bacillus of gas phlegmon recovered when the site inoculated was disinfected half a hour later, but died when the disinfection was delayed longer. When the wound was exposed and tamponade was done, i.e., when open treatment was used, some of the animals were saved. In three instances the Fraenkel Welch bacillus was demonstrated in the wound for weeks. The tincture of iodine used in these cases prevented a general infection but could not destroy the bacilli. However it was found also that the haemoglobin degenerated after a time, lost their power of staining, disintegrated, and finally disappeared.

From these results the conclusion is drawn that antiseptics cannot kill the bacteria in the wound. The author does not accept Veraart's claim that he could demonstrate sterility of accidental wounds in 100 per cent of cases following treatment with tincture of iodine. He maintains that as in Veraart's technique only the superficial layer of coagulated material produced by the tincture of iodine was used for inoculation, no conclusions can be deduced from the results. VOGELER (Z)

**Ritter C. The Origin of Suppurative Perforation**  
(Zur Entstehung des Eiterdurchbruchs) *Muenchen med. Wchnschr.* 1929 II 1795

The author calls attention to the fact that little attention has been paid to the processes responsible for the spontaneous perforation of pus. The theories ascribing the perforation to mechanical factors and proteolytic forces are not satisfactory as they do not explain why preperitoneal and paranephritic abscesses never perforate through the peritoneum, why subcutaneous abscesses of the thigh never perforate into the prepatellar bursa, or why extradural suppuration never perforates into the cranial cavity nor, on the other hand, why perforating intraperitoneal suppurations are apt to perforate externally or into neighboring organs. The physical theory attributing perforation to gravity is refuted by the fact that the abscess membrane is not anæmic but is lined by markedly distended blood vessels and the theory attributing it to proteolytic processes is refuted by the fact that even cold abscesses which possess no proteolytic characteristics may perforate.

Ritter believes that an important factor in the suppurative process is necrosis of the tissues. He states that as a result of bacterial action there is usually a local destruction of tissue which causes a considerable increase in the osmotic pressure of the tissues and that the suppuration with the inflammatory hyperæmia is developed to relieve this pressure. There then occurs an evacuation into the tissues surrounding the focus which is manifested by lymphangitis, lymphadenitis and fever. The perforation of the pus is to be explained by the advance of the necrosis in the direction of the site of perforation followed by the pus.

In suppuration having its origin in the appendix, Ritter has always noted gangrene of the mucous membrane as the earliest change. Later, suppuration occurs and the pericæcal pus has the power to cause further necrosis of tissue with its sequelæ. The perforation of a pleural empyema into the lungs is to be explained by the assumption that a wedge of the parenchyma of the lung first becomes gangrenous and thereby favors entrance of the pus. Ritter found this theory fully confirmed in one case. The perforation of an empyema of a joint always occurs at the site of attachment of the capsule to the bone because at this point the capsule becomes loosened from the dead bone. MAX BUDDE (Z)

## ANÆSTHESIA

**Hasler J. K. Miltigan, E. T. C., Flemming H. L. Jones, H. and Others. Discussion on Anæsthesia in Rectal Surgery. *Proc. Roy. Soc. Med., Lond.* 1930, XXIII, 419**

HASLER states that he knows of no reason why general anæsthesia should be employed for rectal operations performed by the abdominal route as a spinal anæsthetic injected between the third and fourth lumbar vertebrae will produce anæsthesia well above the umbilicus and give good relaxation of the abdominal muscles.

General anæsthesia is indicated in the cases of children and for nervous persons who prefer it, also occasionally to obtain complete relaxation for diagnostic examination and for operations for abscesses situated above the pelvic diaphragm, complicated fistule, and cancer of the rectum and pelvic colon.

Chloroform has no place in rectal surgery. Nitrous oxide oxygen is of value chiefly for minor surgical procedures such as the opening of abscesses, dilation of the anus, and the removal of packing in a deep wound.

Local anæsthesia used for perineal operations in rectal surgery is of three types: (1) that produced by local infiltration of the area of operation (2) extradural anæsthesia produced by caudal and sacral blocks and (3) intradural anæsthesia.

**Local infiltration.** In the local infiltration method from 1.0 to 3.0 c.c. of the anæsthetic fluid commonly a 1 per cent solution of novocain are injected around the outside of the rectum at a depth of about 2 in. from the surface. A preliminary wheal is raised in the skin just posterior to the anus and in the midline. Through this wheal a longer needle is introduced and with a guiding finger in the rectum, 10 c.c. of novocain are injected posteriorly. The needle still piercing the wheal is then moved around to the sides and the front of the rectum, and 5 c.c. of the anæsthetic are injected on either side. As an alternative method the needle may be introduced through the wheal and a ring of novocain injected subcutaneously around the anus. Four injections of 5 c.c. each are then made through this ring at the four cardinal points of the compass. Within five minutes the sphincters should be relaxed and anæsthesia

thesia should be present. Local infiltration provides a satisfactory anaesthesia for the treatment of hemorrhoids, but does not give a large enough area of anaesthesia for operations for fistula, which often spread well into the buttock.

**Extradural anaesthesia.** The extradural methods of producing anaesthesia for operations on the rectum and anus include caudal block, transsacral block, and a combination of the two which is known as sacral block.

In caudal block a certain quantity of the anaesthetic is injected through the sacral hiatus into the caudal canal. From 30 to 40 c cm of a 2 per cent solution of novocain may be used, but some anaesthetists prefer to employ a greater amount of a weaker solution. It produces a satisfactory anaesthesia if it is successful, but requires from fifteen to thirty minutes or even longer to induce complete anaesthesia and in some cases it fails entirely. Hasler has employed tutocain, a local anaesthetic which is said to be about one third as toxic as cocaine and twice as toxic as novocain. When using 20 c cm of a 2 per cent solution, he found that anaesthesia could be obtained in ten minutes, the anaesthesia was deeper than that induced with novocain, and deep pressure sensation was apparently absent. However, there was the usual incidence of failure even in the cases of thin subjects in which the injection into the canal presented no difficulty. Another drawback to caudal block lies in the fact that it is difficult to make the injection without causing pain and patients are apt to become resentful if the anaesthetic fails to act after they have been subjected to discomfort.

Proficiency in the induction of sacral anaesthesia can be acquired only by careful study of the sacrum and its anomalies and practice in locating the sacral foramina in the cadaver.

**Intradural anaesthesia.** In cases of cancer of the rectum, intradural anaesthesia is particularly valuable when it is combined with light general anaesthesia or some form of twilight sleep. If an injection of  $\frac{1}{4}$  gr of morphine and  $\frac{1}{150}$  gr of scopolamine is given from one half to three quarters of an hour before the operation the patient will usually become drowsy or fall asleep as soon as the spinal anaesthetic has been given and he has been made comfortable in the left lateral position. Under these conditions a general anaesthetic can be dispensed with altogether. However, in cases of high growths of the rectum, a certain amount of traction must sometimes be exerted on the bowel to bring the neoplasm down and the tugging on the mesentery may waken the patient and cause him to complain of pain in the abdomen. When this occurs, general anaesthesia is unavoidable. Nitrous oxide and oxygen or a little chloroform and ether mixture on an open mask may be given until the difficult part of the operation has been completed.

While a spinal anaesthetic sometimes produces anaesthesia lasting for from one and a half to two hours, the anaesthesia can be relied upon to last for

only one hour. If there is any reason to suppose that the operation will be unusually difficult and will require one and a half hours or more, the spinal anaesthesia may be combined with caudal block. The extra injection takes very little time and prolongs the duration of the anaesthesia.

The ideal spinal anaesthetic for minor rectal operations is one which can be limited in its action to the sacral nerves, a perineal anaesthesia being thereby produced and a fall in the blood pressure avoided. Such low spinal anaesthesia can be obtained easily by injecting the fluid between the fourth and fifth lumbar vertebrae with the patient in the sitting position and keeping him in that position for about two minutes. If the anaesthetic solution is injected into the spinal canal very slowly to avoid undue mixing with the cerebrospinal fluid, it will sink to the bottom of the dura mater and act only on the lowest sacral nerves. When the injection has been completed the patient should be made to sit up for about two minutes.

In cases of fistula it is not always desirable to produce full relaxation of the sphincters. It is usually imperative for the surgeon to be able to feel the sphincters easily while he is operating. Local anaesthetics, and particularly spinal anaesthetics, relax the sphincters to such an extent that this may be difficult or impossible. Therefore a general anaesthetic is often preferred.

MILLIGAN stated that caudal block anaesthesia would be ideal if it were reliable but it is uncertain. With an identical technique the results vary from perfect perineal anaesthesia to complete absence of anaesthesia. The administration of the anaesthetic is accomplished with ease, but may cause the patient considerable discomfort.

For the induction of local anaesthesia any one of several techniques may be employed. As the choice depends on the local anatomical conditions the surgeon is best fitted to make the injection.

Theoretically, local injections in this region should carry infection into the vulnerable tissues, but in practice infection is almost unknown.

For haemorrhoidectomy local anaesthesia is one of the best types of anaesthesia from the surgeon's standpoint and also for the welfare and comfort of certain patients but is contra indicated in the cases of patients who are so apprehensive that they will interpret the sensation of manipulation as pain.

Consciousness of the operative procedure and of the pain of rapid and simple operations is best obliterated by nitrous oxide oxygen anaesthesia with preliminary sedative medication.

Spinal anaesthesia limited to the sacral nerves has advantages which render it of the greatest value for operations on the perineum. It is reliable. It completely abolishes sensation in the field of operation and is restricted to this field so that the patient is quite unconscious of manipulations in the part and feels no apprehension. It is controllable and has none of the disadvantages of high spinal anaesthesia. It causes no feeling of paralysis in the legs, and it

does not affect the blood pressure or produce unpleasant bladder sequelæ or headache. The administration of the anæsthetic is simple and quickly carried out. It is not unpleasant to the patient, and it is convenient to the administrator if he is skilled in the technique. The anæsthesia is complete in two or three minutes. Apprehension before the operation can be abolished by sedative injections.

JOHN J. MALOZY, M.D.

**Antonin V. The Influence of Local and Lumbar Anæsthesia on the Acid Base Balance After Operation and the Importance of the Preparation of the Patient as Regards This Relationship** (Einfluss der Lokal und Lumbalanæsthesie auf den acidobasischen Haushalt in der postoperativen Zeit, und die Bedeutung der Vorbereitung des Kranken auf diese Verhältnisse) *Acta chirurg. Scand.*, 1930, lvi, 78

In investigations carried out on nine patients, the author found that the changes occurring in the acid base economy after operation under local and lumbar anæsthesia are very insignificant and vary within the limits of individual differences and possible errors. Under the given conditions the regulating forces were able to maintain the original balance in the acid base economy when the vital functions were not disturbed. In cases of lumbar anæsthesia there was a definite fall in the oxidation coefficient. This change in the supply of oxygen to the tissues under lumbar anæsthesia will be the subject of further study.

The preparation of the patient before operation by the administration of alkalis or the injection of glucose had no appreciable effect upon the end result. After injections of glucose and insulin an operation performed under local anæsthesia was followed by increased oxidation in the tissues; the oxidation coefficient rising. In operations under lumbar anæsthesia, insulin had no influence on oxidation, probably because of the paralysis brought about in the sympathetic nervous system.

**Nordmann. Alleged Disasters Following Avertin Anæsthesia** (Die bisher bekannten angeblichen Unglücksfälle nach Avertinnarkosen) *Zentralbl. f. Chir.*, 1929, p. 2739

In the author's opinion a large majority of the deaths which have been attributed to avertin were not related to the anæsthesia as such but were due to faulty preparation of the drug, errors in dosage, the disease, the extent of the operative procedure, complications present before the operation but not

recognized or renal or hepatic disease present previous to the induction of the anæsthesia which delayed the excretion of the anæsthetic. He regards the administration of chloroform to deepen avertin anæsthesia as very dangerous. He believes it is justifiable to attribute death to avertin only when the patient does not awaken from the anæsthesia and finally succumbs in spite of all measures directed against respiratory paralysis and secondary cardiac disturbances. He states also that febrile disturbances following avertin anæsthesia are not to be regarded *a priori* as due to the anæsthetic. He urges that a decision as to the relationship of the anæsthetic to death be withheld in all cases in which autopsy is not performed. He believes that inhalation anæsthesia is not as dangerous as it has been made out to be in recent years, and that avertin anæsthesia is probably much less dangerous than inhalation anæsthesia. Nevertheless he emphasizes that avertin anæsthesia cannot be regulated and is therefore to be used only as a 'basal' anæsthetic.

In the discussion, MARTIN expressed his approval of the author's views and emphasized that the principles of avertin narcosis are as yet poorly understood. He stated that the importance of Straub's findings is weakened by the fact that complete anæsthesia can be obtained with a 1 per cent solution. Moreover, the great number of patients with severe icterus who have withstood complete avertin anæsthesia without the slightest disturbance indicates that icterus is not an index of the ability of the liver to detoxify avertin by combining it with glycuronic acid. The rôle of the kidneys stands in contrast and is the more puzzling since after union with glycuronic acid, there is no longer any toxic action in the body. Perhaps the kidneys are injured purely functionally but occasionally avertin anæsthesia is very well tolerated in the presence of bilateral kidney damage. Of thirty-eight reports of death attributed to avertin, details are entirely missing in seven. Moreover, in twelve cases, about a third of the total number, the dosage ranged from 0.09 to 0.106 gm. Martin believes that the successful induction of avertin anæsthesia is only a matter of experience and observation. In concluding his discussion he reviewed the contra-indications to this type of anæsthesia.

ROTHMIG reported that Sauerbruch has no fundamental objection to avertin but chooses very carefully the cases in which it is to be used, excluding all those with secondary damage from their primary disease.

GOEBEL (Z)

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Monod, G. Immunity from a New Point of View  
*Lancet*, 1930, ccviii, 227

While immunization has been considered a biological phenomenon, the author believes immunity can be acquired from non organic antigens

Experiments show that Bourhoules water protects the neuron against tetanus, and that St Nectaire water neutralizes diphtheria toxins. An animal injected with horse serum followed by daily injections of Vichy water will not have a reaction when again injected with horse serum, whereas the controls will die or become gravely ill. This observation supports the hypothesis of Biliard that we are sensitized, not by proteins, but by lipoids

The author does not claim that proteins play no part in anaphylaxis, but thinks that they are controlled and determined by soaps and lipoids and that mineral waters play their protective part through the latter, supplying active electrolytes which disperse the soaps, and mobilizing the lipoids

In conclusion, Monod states that the immunizing effect of mineral waters is a new discovery worthy of attention

M. HERBERT BARKER, M.D.

Menkin, V., and Menkin, M. F. Studies on Inflammation. II. A Measure of the Permeability of Capillaries in an Inflamed Area. *J. Exper. Med.*, 1930, li, 285

The accumulation of vital dyes in areas of inflammation has been demonstrated by several investigators. The object of the studies reported by the authors was to determine quantitatively and directly the rate of change of concentration of trypan blue in the capillaries of an inflamed area. An inflammatory reaction was produced in the peritoneal cavity of frogs by the injection of 2 c.c. of either 5 per cent aleuronat in Ringer's solution or 4 per cent turpentine in olive oil.

It was found that by means of a colorimetric method the concentration of trypan blue in the capillaries can be estimated by direct observation and its changes followed as the dye passes out of the circulating blood stream. The rate of fall of concentration following the intraventricular injection of the dye was almost twice as great in the capillaries of the inflamed mesentery as in those of the normal mesentery.

M. HERBERT BARKER, M.D.

Meleney, F. L. Haemolytic Streptococcus Gangrene Following the Administration of Scarlet Fever Antitoxin. *Ann. Surg.*, 1930, xci, 287

Meleney reports the case of an eight year-old girl who entered the hospital on account of a spread-

ing ulcer of the buttock, thigh, and abdomen of six weeks' duration. Seven weeks before her admission she had received a small prophylactic dose of scarlet fever serum into the right buttock when an older sister had contracted scarlet fever. Four days later, she herself developed typical scarlet fever with sore throat, vomiting, and a rash. She was then given a large dose of scarlet fever antitoxin in the left buttock. On the second day the swelling caused by this injection began to increase. On the fourth day, the skin became dusky and hulae and blisters formed. Thereafter, frank gangrene of the skin developed over a large area of the left buttock. A surgeon had advised conservative treatment. The temperature mounted each day to 103 or 104 degrees F and the process spread down the thigh and across the abdomen. Small incisions were then made, but the extension of the process continued.

When the patient was seen by Meleney, she was in an exhausted nervous state from painful daily dressings and she had a daily rise of temperature and frequent chills. Extensive incisions were made in all directions, the tissues being opened widely, and for four days she was treated with wet dressings and hourly poultices. The process then promptly subsided. When the indurated margins had become soft, Dakin's solution was instilled through Carrel tubes. After separation of the slough, skin grafting was done.

This case shows the disastrous results which occur if haemolytic streptococcus gangrene is not recognized early and given adequate surgical treatment.

The exceedingly rapid development of necrosis in haemolytic streptococcus infection resembles strikingly the necrosis taking place in experimental animals which have been made hypersensitive or allergic. Hypersensitivity to bacterial products resulting in necrosis of tissue has at least two different manifestations. One consists of a phase of hypersensitivity in the course of repeated intradermal inoculations of bacterial extracts which comes on about three or four weeks after the first injection, lasts a week or ten days, and then passes off. In this phase, the injections produce extensive oedema of the tissues with central necrosis of the skin. In the other, there is little or no primary reaction when filtrates of certain organisms are injected into the skin, but twenty-four hours later, if the same filtrate is injected into the vein, the areas of previous intradermal injection become swollen and red within a few hours, certain portions turn blue, blisters form, and frank gangrene of the tissues develops.

Whatever the theory of the pathogenesis of haemolytic streptococcus gangrene, the proper method of treatment consists in early extensive incisions.

SAMUEL KAHN, M.D.

Baumecker H. Carcinoma and Lymph Gland Metastases (Carcinom und Lymphknotenmetastasen) *Deutsche Zeitschr f Ch r*, 1929, CCXXII 12

It is generally believed that sarcoma spreads chiefly by way of the blood stream and carcinoma chiefly by way of the lymphatics, but a true differentiation on this basis does not exist. Therefore, at operation for carcinoma, the surgeon attempts to remove the regional lymph glands when they appear to be involved. Often he is astonished, on microscopic examination of such glands, not to find the expected metastasis; nevertheless, even in such cases, the lymph glands present changes with a certain regularity. Frequently they show evidences of chronic lymphadenitis—desquamated, proliferated, and enlarged sinus endothelial cells.

Since in the cases which Baumecker studied there was no infection of the tumors, he considers these changes in the lymph glands as the manifestation of a metabolic rather than an inflammatory process. He is of the opinion that this endothelial proliferation is due to metabolic products given off by the primary tumor. Occasionally the swollen cells are cast off and come to lie free in the sinuses where they are erroneously interpreted as being invading carcinoma cells.

It cannot be denied that tumor cells, like other corpuscular elements may be carried to regional lymph glands by the lymphatics but it is not readily understood how these displaced cells are able to

multiply to such an extent and reproduce organic structures resembling the tissue of origin. Moreover, the question as to the origin of the supporting tissue remains unanswered. All of these functions disagree with the often expressed view that the tumor cell is especially weak, sick, and damaged. There can be no doubt that, for instance, an epithelioid cell or Langhans giant cell is not carried from the primary site to distant lymph glands. It develops rather in that location under the influence of bacteria. Carcinoma is not, to be sure, an infectious disease, but in the last analysis the specific granulation tissue also is only the product of an endotoxin and all of these phenomena are to be considered from the point of view of the disposition of foreign organized protein.

The author regards tumor metastasis also as the expression of a general metabolic disturbance manifested in tumor cachexia rather than as a condition of local origin. In this connection he cites experiments in which under the influence of chemical substances (tar) and as the result of tumor transplantation distant effects in the form of tumor growths appeared in other regions rather than at the site of inoculation. He is of the opinion that tumor metastasis in lymph glands also takes place right there. The initiating factor is the still unknown agent that provided the first impulse toward tumor formation. The development of the neoplasm in the lymph glands is closely related to the reticulo endothelial system.

ZILLNER (Z)

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# INTERNATIONAL ABSTRACT OF SURGERY

SEPTEMBER, 1930

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### EYE

Cardell, J D M. Krukenberg Spindles. *Proc Roy Soc Med*, Lond, 1930, viii, 620

Of the cases of Krukenberg spindles reviewed by the author, 71.4 per cent were those of females. The average age was forty six and two tenths years. The condition was bilateral in 93.8 per cent. Myopia was present in 80 per cent and congenital defects were found in 26.7 per cent. Inflammation was present in 20 per cent. In one patient the pigment was anterior to Descemet's membrane, and in the most recent case observed by the author was circulating in the anterior chamber. VIRGIL WESCOTT, M D

Rodenbaugh, F H. The Treatment of Malignant Tumors of the Eye and Orbit by Radiation. *Radiology*, 1930, xiv, 309

In the treatment of the region of the eye by irradiation the surrounding tissues must be protected from fibrosis. Radium is preferable to the X ray because it is more easily applied and the dosage can be more accurately measured. In the treatment of superficial lesions of the lids, cornea, or sclera, Rodenbaugh uses from 25 to 50 mgm of unfiltered radium for from two to ten minutes. He attacks deep growths by heavily filtered general or local X ray or radium irradiation of the orbit. He points out that in no other part of the body is it possible to observe the effect with an instrument of such precision as the corneal microscope.

The article contains detailed reports of cases of epithelial carcinoma, corneal sarcoma, multiple pigmented tumors of the conjunctiva, and pigmented tumors of the iris. Rodenbaugh states that in cases of intra ocular and intra orbital tumors, irradiation therapy is not satisfactory. SAMUEL A DURR, M D

Harbridge, D F. The Capsulotomy Method of Lens Expression. *California & West Med*, 1930, xxxii, 158

In cases of senile cataract the author performs a preliminary iridectomy followed by capsulotomy.

He describes his technique in detail. A good result is obtained in about 90 per cent of selected cases. After cataract is usually operated upon about two months following the extraction.

In conclusion, Harbridge reviews the operative methods preferred by various leaders in ophthalmology. SAMUEL A DURR, M D

### NOSE AND SINUSES

Tilley, H. Some Experiences in the Surgical Treatment of Inflammation of the Frontal Sinus and Its Complications. *Laryngoscope*, 1930, xl, 165

In acute inflammations of the frontal sinuses, conservative treatment is advisable. When conservative measures fail, drainage is often improved by removal of the anterior half of the middle turbinate followed by frequent irrigation of the sinus with a warm hypertonic saline solution. External operation is justified when oedema of the soft tissues over the anterior wall of the sinus or of the upper eyelid indicates that the inflammation has passed beyond the limits of the mucoperiosteum. The danger presented by a tortuous or narrow frontonasal canal can be overcome by enlarging the canal with a suitable burr passed from above downward. Blunt forceps should be used to remove masses of oedematous tissue. Whenever a general anesthetic is employed, a postnasal pack should be inserted. Undue trauma to the mucous membrane must be avoided. The use of a sharp curette is contra indicated. External drainage should be established by means of several small rubber tubes.

In chronic inflammation of the frontal sinuses, radical operations of the external type are rarely required. The author reviews the chief operations performed for the relief or cure of chronic sinusitis. The intranasal operation involves removal of the anterior half of the middle turbinate and of polypoid masses and enlargement of the frontonasal canal. A primary external operation is advisable when a narrow nasal cavity prevents free access to the ethmoidal region. A tortuous frontonasal canal, an

extensive loculated sinus and attacks of subacute periostitis call for the primary external procedure. A secondary external operation is necessary when intranasal measures fail to relieve the chief symptoms. The type of external operation depends upon the requirements of the given case. For extensive frontal sinuses, the author recommends the technique elaborated by Howarth.

The most serious complication of operations on the frontal sinus is diffuse osteomyelitis. For the prevention of this condition, the author recommends irrigation of the sinus before operation and after the sinus is opened. Postoperative diplopia is frequent, but usually clears up. Orbital cellulitis should be treated by free incision and hot fomentations. Septic meningitis is usually fatal.

W. W. PATON, M.D.

### MOUTH

Widmann B. P. Radiation Technique for Cancer of the Mouth with Combinations of Gamma Radium Rays and Varying Qualities of High Voltage Roentgen Rays. *Radiology* 1930 xiv, 197.

Technical methods of irradiation and dosage must be carefully developed in order that a uniform distribution of the irradiation to all parts of a cancer may be obtained in intensities sufficient to destroy the lesion. It is incontestable that roentgen ray and radium are valuable in early cancers, especially those of the skin, the mouth and the cervix of the uterus. The technique of irradiation is being improved rapidly as a result of free communication of experiences between institutions throughout the world. It has been advanced also by Broder's discovery that there is marked variation in the cellular structure of epidermoid carcinomata. The prognosis has been found to be better when the degree of malignancy is high because radiosensitivity increases with malignancy. Ewing says: "The derivation of squamous carcinoma from adult squamous cells undoubtedly determines the adult resistant characters of the tumor cells." Transitional epithelium found in a group of epidermoid carcinomata arising in the upper cervical canal of the uterus, the trachea, portions of the larynx, the nasal passages, and the ducts of many glands opening on mucous surfaces exhibits considerable radiosensitivity. The histogenesis of many of the intra oral group of carcinomata is difficult to determine. Since more than 60 per cent of mouth cancers are advanced and associated with gland involvement when they are first seen by the radiologist, a definite radical technical procedure must be further developed if we are to obtain anything more than palliative benefits in early resistant and advanced cases.

It is generally agreed that intra oral cancer is best managed by irradiation but that sometimes especially when there is gland involvement, the irradiation should be supplemented by surgery. For cases with gland involvement, Quick recommends complete unilateral dissection of the neck and the

scattering of radium implants in suspicious areas in the wounds. For cases of cancer of the lip, Regaud advises removal of cervical glands by radical bloc resection. In cancers of the mouth, such resections are done even if the glands are not palpable. When the glands have been invaded by the mouth cancer the treatment is confined to the use of heavy external radium packs. Forsell reported that of 160 cases of cancer of the mouth treated with irradiation alone, lymph node metastases developed in 75 and a one year cure was obtained in none, whereas in cases in which surgery was combined with irradiation a three year cure was obtained in 35 per cent and a five year cure in 30 per cent. Implantation of radium directly into a single enlarged node or the removal of the node if it is not fixed has shown good results and is justified in selected cases. Bilateral gland involvement is generally considered beyond hope of cure.

The author irradiates both sides of the neck in all cases of intra oral cancer, regardless of gland involvement. A single freely movable gland is occasionally excised after it resists intensive irradiation. Surgery is not practiced on enlarged glands secondary to cancer of the lip, cheek, or floor of the mouth unless there is hope of curing the primary lesion by irradiation. In interstitial irradiation technical difficulties are encountered in the effort to obtain uniform distribution of the radium points. In addition there is some danger of promoting metastasis. The author precedes interstitial irradiation with contact irradiation in divided doses over a period of about ten days. His results from the interstitial use of radon with a 0.2 mm gold filter have been very encouraging in early selected cases. When the lesion is locally inoperable and the glands are involved, external irradiation combined with surface applications has proved as adequate as interstitial treatment. The use of a filter of 2 mm of platinum results in an erythema value  $2\frac{1}{2}$  times greater than that obtained with a filter of 0.5 mm of platinum. While there seems to be no proof of a difference in the biological effect of the different qualities of rays transmitted, the distribution of the irradiation intensity within the tissues changes greatly with the wave length. In irradiation with a short wave length tissue tolerance and penetration are increased. Therefore the use of rays of short wave length is of paramount importance in the treatment of deep growths.

Roentgen irradiation with 200 kv and 0.5 mm of copper and irradiation with radium packs with a penetration equivalent to 2 mm of platinum given over a period of two weeks permits 120 per cent of a dose of roentgen rays and 125 per cent of a dose of radium to be given on the same skin area without untoward effects. In the average neck, the total of 245 per cent of an erythema dose to each side of the neck or nearly 500 per cent to both sides results in a depth dose of  $2\frac{1}{2}$  erythema doses. The erythema is intense, appears in about twenty one days and lasts ten days. In certain advanced cases 350

per cent of the combined X-ray and radium irradiation to a single skin port may be given without damage if it is extended over a period of from four to six weeks. A radium pack 10 by 15 cm at a distance of 4 cm and with a platinum filter of 2 mm delivers an erythema dose in 15,000 mc hrs. If the irradiation is divided into 4 sittings of forty-eight hours each, a total dose of 20,000 mc hrs may be given. In the author's routine method for the treatment of the neck in cases of intra oral cancer 8 packs with a total dosage of 40,000 mc hrs are employed. On the day of rest between the radium treatments the X-ray treatment is given to each side of the neck.

If the primary involvement is considered operable, radon in 0.2 mm gold seeds is embedded in the lesion to the full intensity and homogeneously, and contact surface applications approximating 75 per cent of an erythema dose are added. In advanced cases, surface application with heavy filtration is as effective in local lesions as interstitial irradiation. Two millimeters of platinum permit more intensive irradiation with less caustic effect than 0.5 mm of platinum. The author describes and shows in illustrations applicators carrying radon tubes within a wall of 4 mm of brass and 1 mm of rubber which are arranged on lead handles with rubber pegs or prongs so that adjustments can be made to any location in cancer of the mouth. Illustrations show the application of the tubes to various sites in the mouth and the use of the radium pack for irradiating the neck. The pack carries an average of from 100 to 125 mc with an average dosage for each forty-eight hours of 5,000 mc hrs. The value of contact applications in the mouth lies in the elimination of caustic action by the heavy filtration and the possibility of effectively treating weakened patients and those with advanced lesions. The author recommends the contact surface application not to supplant the interstitial use of radium, but to supplement it in early cases. For advanced cases, he considers the contact surface application superior to interstitial methods. He has followed this technique for a year.

Widmann's conclusions may be briefly stated as follows:

The success of irradiation depends upon the radiosensitivity of the lesion, which in turn depends upon cellular differentiation. Success in the treatment of advanced cancer of a resistant type requires the use of greater quantities of irradiation, and this requires the use of rays of short wave length with greater penetration and increased skin tolerance.

Tissue tolerance is greater when combinations of rays of short wave length are employed. When external and contact surface irradiation alone are combined, from 5 to 8 erythema doses may be administered through the center of the tongue with the use of filters equal to 2 mm of platinum and amounting to approximately  $2\frac{1}{2}$  times the usual filter of 2 mm of brass. Improvement in the treatment of advanced cancer will depend upon pro-

cedures which will eliminate dependence for good results upon "caustic effects." Combinations of short wave length irradiations will improve the end-results in advanced and resistant types of intra oral cancer.

A. JAMES LARKIN, M.D.

**Chompret and Dechaume. Should a Tooth Be Extracted During the Stage of Acute Infection?** (*L'aut il extraire la dent en periode d'infection aigue?*) *Presse med.*, Par., 1930, XVIII, 297.

The authors advise immediate extraction, in the case of permanent teeth, in the following conditions complicating dental caries:

1. Phlegmon of the bone, when the suppuration has passed through the periosteum and involved the subcutaneous and submucous cellular tissue, unless the tooth is monoradicular (especially canine) or the bone lesions are minimal, under which circumstances conservative treatment is sometimes admissible.

2. Diffuse osteitis, osteomyelitis, or maxillary sinusitis of dental origin.

3. Diffuse phlegmon septicaemia in which extraction should be the first step in the treatment.

4. Adenophlegmon or suppurative periadenitis.

In the case of a temporary tooth, the tooth should be extracted at once if there is reason to fear diffusion of the infection. In the case of a wisdom tooth in abnormal position, the urgency of extraction depends upon the severity of the lesions. In cases of suppurative pericoronaritis or involvement of the mucous membrane it is sometimes possible to wait for the cold stage if the patient is seen during a first attack or when the symptoms are decreasing. However, if improvement does not occur soon, extraction becomes necessary for it is impossible to foresee the course that the disease will take. If the wisdom tooth is in a normal or subnormal position on the arch, the lesions are usually in the mucous membrane and a mere uncovering (decapuchonnage) is usually sufficient, but in some situations of the tooth the sacrifice of the soft parts would be too great and extraction would be preferable. When, as occurs in rare cases, the cellular tissue or nerves are involved immediate extraction is indicated.

In discussing the objections made to extraction in the acute stage the authors maintain that it is difficult to show a relation of cause and effect between extraction and a succeeding grave septicaemia. They call attention to the fact that the occasional occurrence of death from septicaemia shortly after appendectomy has not modified the indications for operation in acute appendicitis and no one has ventured to regard the operation as the immediate cause of the septicaemia. Moreover, it is now very generally admitted that the blood is a poor culture medium. The danger lies in persistence of the focus of infection.

The technique to be followed in the extraction is described. A good roentgenogram is necessary, especially in the case of a wisdom tooth. Though the authors have seen no accidents from the use of adrenalin, they believe that novocain solution with-

out adrenalin is to be preferred. The needle must be inserted into healthy tissue around the field of operation and must be sterilized between each insertion. In the case of a lower wisdom tooth the use of forceps is not advisable. All unnecessary traumatism is to be most strictly avoided. If fracture of the apex, for instance, should occur during intervention for lesion in the cellular tissue following a periodontitis at the level of a wisdom tooth, the dentist must not proceed with the idea that the tooth should be extracted at all costs. A good view of the field is an essential. This should be procured by tamponnade and the use of Clark's mirror. At the completion of the operation alveolar lavage with warm water is indicated to provide a beneficial hemorrhage. Healing is hastened by frequent lavage with warm boiled salt water.

A few hours after the operation there is amelioration of the pain. The swelling and trismus increase temporarily. By the end of a week all symptoms are gone except the swelling which remains for some time longer.

FLORENCE A. CARPENTER

### NECK

Marinucci S. Hemorrhagic Cysts of the Neck.  
(Cisti ematiche del collo) *Arch ital di chir* 1930  
xxiv 78

The author reviews the various theories regarding the pathogenesis of hemorrhagic cysts of the neck and reports a case of such a cyst. The cyst he reports was in the carotid region between the two lower insertions of the sternocleidomastoid and was adherent to the internal jugular vein. It was detached from the jugular vein without opening the lumen of the vessel and without finding any direct communication with the vein. It was the size of a nut. In some places its walls were thick and in others so thin that the blue of the blood could be seen through the skin. Microscopic examination showed it to be made up of cavernous tissue with connective tissue septa.

AUDREY G. MORGAN M.D.

Wagner Jauregg J. Endemic Goiter and Myxoedema (Endemischer Kropf und Myxoedem).  
*Wien klin Wchschr* 1930 1, 1

Among endemic goiters a distinction must be made between Alpine goiters and the goiters of the plains and coastal regions. While the Alpine goiter at least during its development, is poor in colloid the goiter of the flat lands (for example, the low lying Danzig plains) is characterized by an increased colloid content. The parenchymatous form of the Alpine goiter occurring in youth is not found in the lowlands. The goiter of the lowlands tends toward hyperthyroidism and is iodine sensitive. Moreover, in the lowlands, cretinism and goiter of the newborn are absent.

Even in regions where endemic goiter predominates, the frequency and severity of goitrous affections varies in different localities and at different times. Occasionally, as in the post war period

(hunger blockage) an extraordinary increase in goiter is noted. The school statistics of Nuernberg and Wuerzburg indicate that since 1925 the frequency of goiter in these cities is again decreasing. This decrease is not due to iodine prophylaxis as the figures include even the very youngest children and in these two cities iodine is given only during the school years.

With regard to the cause of goiter the investigations on iodine metabolism carried out within recent years have been of some significance. It has been found that adults in goiter free regions excrete more iodine than adults in regions where goiter is endemic. The amount of iodine necessary to maintain normal iodine metabolism is supplied only in part by the drinking water. The chief source of iodine is the food. Studies by Fellenberg disclosed that in goiter free regions much more iodine is ingested with the food than in regions of endemic goiter. It is not likely that the iodine content of the food is dependent upon the iodine content of the soil as Gaus and Griesbach have shown that the iodine content of the atmosphere is sufficient to meet the iodine need of plants. The theory that a lack of iodine is the sole factor in the development of goiter is to be rejected at least for the lowlands. Determinations of iodine excretion have shown that a deficiency of iodine in the lowlands cannot be assumed. The hyperthyroid character of goiters in the lowlands also speaks against a paucity of iodine. Moreover, goiter is often not seen in places where there is a definite deficiency of iodine, such, for example, as certain regions of the Dutch Indies and in the Himalayas. The true cause of goiter must be sought in some other factor. Iodine is of importance chiefly as a goiter preventing agent.

At the International Goiter Conference held in 1927 the infectious theory of goiter was brought up for discussion frequently. However, the assumption of an infection as the cause of the condition must remain merely theoretical until the infecting organism is determined. No better supported is the theory that intestinal parasites produce a deficiency of iodine by removing iodine from the food. All experimental attempts to prove the theory of infection have given negative results. For example, it was found impossible to keep rats in goitrous districts free from goiter even when they were given only boiled water from Vienna or to cause goiter in rats in Vienna by giving them drinking water from goitrous districts. Moreover, examination of the drinking water of the goitrous district of Voalberg shows that the water supply there is excellent and that the possibility of infection by the dejecta of goitrous persons may be excluded. Nor can it be assumed that the lowlands have cleaner drinking water than the mountainous districts.

The author discusses also the theory propounded by Pfundler twenty two years ago that goiter is caused by a radium emanation arising from soil or water or by some other unknown form of irradiation. In favor of this theory is the fact that goiter predomi-

nates in mountainous regions where there are rock formations giving off radium emanations and perhaps also emanations of other types

The author concludes that while the cause of goiter is unknown, it is able to produce its effects on the human being only in the presence of a deficiency of iodine. He believes it probable that the unknown factor affects the thyroid primarily, rendering it unable to convert the available iodine to the uses of the organism and thereby producing conditions stimulating hypertrophy of the laboring thyroid tissue. The greater the paucity of iodine, the earlier will the symptoms of glandular insufficiency appear. Apparently, also, hereditary and constitutional factors are involved in the injury to the thyroid.

The conception of goiter development as a sign of plinglandular degeneration is to be rejected. The histological and functional changes occurring in the other glands of internal secretion in conjunction with goiter are secondary phenomena.

The author then discusses the question of the relation between endemic goiter and endemic cretinism. He states that although the manifestations of cretinism closely resemble those of athyreosis, the relation between disease of the thyroid, cretinism, and deafmutism is still unexplained. However, there is no justification for classifying under the term "endemic dystrophy" degenerative conditions, such as mongolianism and chondrodystrophy, which have nothing in common with endemic goiter. In regions where cretinism is observed there are seen also other abnormal structural and functional disturbances which, as is evident from their favorable response to treatment with thyroid preparations, are of a hyperthyroid character. Thus, delayed dentition and delayed closure of the fontanelles are observed in regions with endemic goiter. In children affected with cretinism this delay is even more marked. The term "endemic dystrophy" should be applied only to the milder forms of definite cretinism.

COKKALIS (Z)

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Wilson J G *Contributions of Otolaryngology to Neurology Arch Otolaryngol*, 1930 xi, 265

The author first considers the aid rendered in diagnosis by the vestibulo ocular reflex which is concerned in the posturing of the eye necessary to vision. Abnormal changes in the primary vestibulo ocular reflex produced by disease or by artificial stimulation of the end organ are of value in the localization of the area in which the disturbing factor is situated.

The diagnostic value of nystagmus is considered in lesions of the labyrinth deviation of the eye to the side of the lesion is followed by a quick return toward the midline. The nystagmus is increased by looking to the side opposite the lesion and is diminished by looking to the side of the lesion. While conscious effort can control the quick component and keep the eyes toward the side of the lesion conscious effort has little or no effect on the slow component and cannot keep the eyes away from the side to which it is directed. Such an attempt makes the patient more uncomfortable. When the lesion is confined to the labyrinth the duration of the nystagmus is short—three or four days at the most. The loss of cerebellar influence is slowly if ever completely compensated.

In lesions of the peripheral organ of the ear, the spontaneous vestibular reflexes are to be attributed to a loss rather than an increase of function supposedly due to irritation.

Nystagmus of cerebellar origin shows a slow deviation and a quick return in the horizontal plane. The deviation of the eyes is to the side opposite the lesion. To complete the picture of cerebellar nystagmus there must be in addition an ataxic movement of the eyes when the patient looks to the right or left which is increased by fixation and when the patient looks to the side of the lesion.

Lesions involving the mesencephalon by direct or indirect pressure often produce a vertical nystagmus and may be accompanied by dissociation of eye movements and such abnormal caloric reactions as perverted nystagmus.

Intracranial lesions situated above the midbrain usually do not interfere with the vestibulo ocular reflex but at times they give a qualitative and quantitative change in this reflex from caloric reaction and rotation.

The fact that cerebral inhibition can control nystagmus (certainly the quick phase) suggests that there is a center above the midbrain which receives stimuli from the periphery.

ROBERT ZOLLINGER M D

Piquet, J, and Minne J *Clinical Study and Surgical Treatment of Brain Abscess of Otomastoid Origin (Etude clinique et traitement chirurgical de l'abcès encéphalique d'origine otomastoidienne) Arch internat de laryngol*, 1930 xxvi 5

The authors report 11 cases of abscess of the brain Of 9 which were operated upon a cure was obtained in 6 In 3 cases there was a diffuse encephalitis In 2 this terminated in death in spite of an extensive operation Of 2 patients with multiple diffuse abscesses 1 died and the other recovered after repeated openings of successive abscesses In the case of the latter patient, nearly all of one cerebral hemisphere was destroyed In 4 cases of single collections of pus operation resulted in cure, no recurrence has developed even in those that have been under observation for as long as eight years.

Of 135 cases of brain abscess found in the literature 105 were cases of single abscess. Sixty eight of the single abscesses were cerebral and 37 were cerebellar Of 21 cases of multiple abscesses, the lesions were cerebral in 12 and cerebellar in 9 In 9 cases there was a diffuse encephalitis.

Of the cases of single cerebral abscess a cure was obtained by operation in 87 per cent. Death was usually due to delay of operation, a complicating sinus thrombosis or insufficient postoperative care. In the cases of single cerebellar abscess the results were less favorable, a cure being obtained in only 68 per cent of 25 cases in which operation was performed and the abscess discovered. Multiple abscesses were much more serious, a cure being obtained in only 41 per cent of the cases in which they were located in the cerebrum and in only 1 of 9 cases in which they were located in the cerebellum.

The authors believe that the mortality of acute encephalitis as indicated by the cases reported in the literature—43 per cent in cases not operated upon and no deaths in cases operated upon—is in correct as it is probable that fatal cases of encephalitis are not ordinarily reported. However, they conclude from their own experience that acute encephalitis should be treated surgically.

The pathogenesis of brain abscess and the propagation of the infection from the ear are discussed at length. Brain abscesses are caused most frequently by chronic suppuration of the middle ear. Those of traumatic origin and those due to fronto ethmoidal sinusitis are very much less common. When acute otitis causes brain infection a diffuse encephalitis usually results if the passage of the micro organisms through the meninges is accompanied by the formation of adhesions which protect the subarachnoid spaces from infection and serve to prevent meningitis.

Infection of the brain may occur by way of the blood stream or by direct propagation. The tegmen tympani being destroyed, the dura is in direct contact with the septic contents of the middle ear and its resistance is finally overcome. Because of the slowness of the invasion of microorganisms through the dura, adhesions are formed which join the cortex of the brain to the internal leaf of the dura. Through these adhesions the infection is propagated. In acute otitis, infection of the brain occurs chiefly by the hematogenous route, whereas in chronic otitis it occurs chiefly by direct propagation. When the infection occurs by the blood stream, adhesions form very late and surgical opening of the dura may lead to infection of the meninges. For the creation of protective adhesions in diffuse encephalitis following acute otitis, the authors recommend Lemaître's method.

Cerebellar abscesses always originate from tympanomastoid osteitis. The infection of the brain occurs as a rule by way of the blood stream, but in 2 of the authors' cases it occurred by continuity. Eagleton's statistics based on 125 cases give the cause as labyrinthitis in 45 per cent, as thrombosis of the lateral sinus in 32 per cent, and as caries of the petrous portion of the temporal bone in 22 per cent. The clinical forms and the treatment of cerebellar abscesses are discussed in detail. The authors prefer the mastoid route of approach to these abscesses.

FLORENCE A. CARPENTER

Van Wageningen, W. P. Papillomata of the Choroid Plexus. Report of Two Cases, One with Removal of Tumor at Operation and One with "Seeding" of the Tumor in the Ventricular System. *Arch Surg*, 1930, xx, 199.

The first case reported by the author was that of a three months old infant with a bilateral internal squint and gradual enlargement of the head. Exploration after the removal of a bone flap on the left side revealed an irregular tumor mass about 5 cm in length and 4 cm in height on the medial wall of the left ventricle opposite the pineal gland region. The neoplasm was too vascular for biopsy. Three deep roentgen treatments were given over a period of three months. At operation four months later the tumor was found to be firmer, less vascular, and smaller by 2 cm in all diameters. Excision was accomplished with the aid of the electrocautery.

The second case was that of a boy thirteen years old with a history of headache, weakness of all extremities, aphasia, loss of weight, and pain and swelling in the region of the left knee. These symptoms had been present for over a year. Death occurred six days after the patient's admission to the hospital. Sections of the brain revealed a tumor in the left ventricle measuring 7 cm in the transverse diameter and 6.5 cm in the vertical diameter in the region of the cerebral peduncles. At this level the third ventricle was filled with tumor tissue. The walls of the left temporal horn were studded with many small implants of the same consistency as the tumor tissue

elsewhere. In the right dilated occipital lobe, entirely separated from vestiges of the choroid plexus, there was a small raised papillary structure which was an implantation from the other side. The fourth ventricle appeared normal.

The author reviews about forty five reported cases, a few of which presented the phenomenon of seeding.

These tumors occur most commonly in the fourth ventricle, next most commonly in the lateral ventricles, and least commonly in the third ventricle. Ninety-three per cent of the reported papillomata of the lateral ventricles occurred on the left side. Such neoplasms constituted 6 per cent of the 964 verified tumors of Cushing's series.

The author believes that a considerable part of the non obstructive hydrocephalus found with tumors of the choroid plexus may be associated with the increase in epithelial surface. He thinks removal of tumors of this type is feasible especially if electro-surgical devices are employed. Roentgen treatments apparently reduce the vascularity of the neoplasms.

ROBERT ZOLLINGER, M.D.

Chevassut, K. The Etiology of Disseminated Sclerosis. *Lancet*, 1930, ccxviii, 552.

Of 189 cases of disseminated sclerosis in which the colloidal gold test was carried out by the author, the curves were positive in 77 per cent. Seventy per cent of the positive results showed precipitation in dilutions of from 1:80 to 1:640. The maximum precipitation usually occurred in the dilution 1:80. As the fluids tested did not present an increase in either globulin or albumin, and as further investigations showed that the same curves could be demonstrated in tests of the diluted blood serum of the same patients, the conclusion was drawn that the agent of precipitation was the causal factor of the disease and probably a toxin.

In an attempt to ascertain whether a toxin was present, an investigation of the liver function of patients with multiple sclerosis was carried out. The results of determinations of glycuronic acid, indican, and levulose tolerance in 84 cases showed that in a high percentage of the cases there is deficiency in the antitoxic and metabolic functions of the liver.

After correlation of the histological findings of previous investigators with the results of the colloidal gold and liver function tests, it appeared probable that if a toxin is an etiological factor in the disease, it must be elaborated from a specific source, and that the high degree of specificity required can be provided only by a micro organism. Accordingly, cultural experiments with the cerebrospinal fluid appeared to be of importance. However, the results of such studies were completely negative until a trial was made with Hartley's broth to which normal human serum was added. Cultures made with this medium and human serum were also negative from an ordinary bacteriological point of view, but showed evidence of a change in reaction which had not been



obtained under any other conditions. As this change occurred only when Hartley's broth and human serum were used as a culture medium, it seemed improbable that it was due to an enzyme ferment or toxin.

The detection of an organism then became an optical problem. The equipment used was the Beck "massive microscope" with a 2 mm apochromatic objective of 1.2 N. A. and a dark ground illuminator designed to work with such an objective. This was employed with a monochromatic green light obtained by the use of a glass screen and a mercury vapor lamp. As the observations could be made with a small amount of light energy, any possibility of damage to living material was eliminated. In order that the surface of serum agar could be examined with a 2 mm oil immersion objective, the cover glass method devised by Welch was used.

A slip culture of cerebrospinal fluid examined after incubation at 37 degrees C. for from twenty-four to thirty-six hours showed small groups or colonies of spherical bodies, some of which appeared to have small refractile granules attached to them. At a slightly later stage many single spheres with and without granules could be seen. The appearance of these spheres and the colonies which they formed was very characteristic when observed under the microscope. Apparently the refractile granules gradually moved away from the spheres. Occasionally a fine filament was noted between a granule and a sphere. Microscopic examination at successive intervals of time showed that the spheres multiplied and the colonies increased in size. After from seven to ten days large degenerating colonies could be seen and the visibility of the spheres was decreased. It was found that sub cultures could be obtained by using fresh tubes of Hartley's broth and serum. That the described bodies are characteristic of a type of living organism is evident from the study of bovine pleuropneumonia.

In an investigation of the conditions affecting the growth of these bodies it was found that the cultures required aerobic cultivation, that they did not survive a temperature of 50 degrees C. for more than thirty minutes, that they were able to withstand a temperature of 0 degrees C., that they were killed by a 0.5 per cent solution of carbolic acid, that they were inhibited by 5 per cent glycerol and that they were very sensitive to changes in reaction. The hydrogen ion concentration of the medium must not be greater than 7.6 or less than 7.5 when the culturing is begun. No growth visible to the eye was ever present in solid or liquid cultures. Slight opalescence was frequently seen in liquid cultures. The production of acidity was progressive until about the fifth day, when an alkaline reversion began. When sugars were added to the cultures changes in reaction occurred sooner or later, in no case could the original sugar be recovered.

In an attempt to determine whether the appearances observed in cultures were stages in the life cycle of the organism, experiments in filtration were

carried out with the use of collodion membranes. When a certain grade of membrane was used it was found that the filtrate contained granules only. Inoculation of this filtrate into serum broth and then to slip cultures gave the characteristic appearance of spheres and granules.

The correlation of these various experimental results led to the conclusion that, under certain conditions, a living virus can be cultured from the cerebrospinal fluid from cases of disseminated sclerosis. Similar cultures of the cerebrospinal fluid in 269 control cases, including normal persons and persons suffering from hysteria, tabes dorsalis, cerebrospinal syphilis, subacute combined degeneration of the cord, transverse myelitis, spinal compression, epilepsy, cerebral tumor, and encephalitis were completely negative. KURT H. HORCK, M.D.

#### Purves Stewart Sir J. A. Specific Vaccine Treatment in Disseminated Sclerosis. *Lancet*, 1939, ccviii, 560

The author states that Chevassut, at his request, used the cultures described by her for the preparation of an autogenous vaccine. The effects of the vaccine clinically and serologically, were studied in a series of 128 cases of disseminated sclerosis. Seventy of the patients have now remained under observation long enough to give an idea of the results.

The vaccine was prepared in normal saline solution with the addition of 0.5 per cent carbolic acid solution, and was then standardized by counting the number of granules (not spheres) under the microscope.

In patients who were undergoing a true remission with clinical improvement as a result of vaccine treatment the serum inhibited the growth of the virus. This viricidal property of the serum was found to be highly specific. In 27 of 32 cases it was found inhibitory only to the virus cultured from the patient's own cerebrospinal fluid. When a true therapeutic remission occurred as a result of the vaccine treatment the cerebrospinal fluid lost its pathological serological reactions and no longer yielded a positive culture of the organism. Concomitantly the clinical signs and symptoms came to a standstill but there remained, as might be expected, certain residual physical signs which were due to the permanent damage already inflicted upon the central nervous system. In several patients coming under observation during a spontaneous remission the cerebrospinal fluid always showed the usual positive gold and globulin reactions along with the presence of the organism.

The clinical and laboratory findings in 4 cases are reported in detail.

The clinical results in 70 cases were as follows: condition clinically arrested, with disappearance of the organism 8 cases; condition clinically arrested with improvement in the gold curve and globulin reaction but with the organism still present 32 cases; and condition apparently uninfluenced clinically 30 cases.

Of the 10 early cases, the clinical symptoms were improved in 9 and not improved in 1. Of the 27 moderately advanced cases, they were improved in 22 and not improved in 5. Of the 33 advanced cases, they were improved in 9 and not improved in 24.

Cultures of the cerebrospinal fluid became negative in 4 of the 10 early cases, 4 of the 27 moderately advanced cases, and none of the 33 advanced cases. The gold and globulin reaction showed improvement in 8 of the early cases, 21 of the moderately advanced cases, and 20 of the advanced cases.

In successfully treated cases, 2 and often 3, 4, or more courses consisting of 12 increasing doses of vaccine have been required before the organism has disappeared. The gold curve and globulin reaction generally show signs of improvement before the cultures show signs of becoming negative.

KNUT H. HOUCK, M.D.

Hicks, J. A. B., Hocking, F. D. M., and Purves-Stewart, Sir J. Disseminated Sclerosis Pathological and Biochemical Changes Produced by a "Virus" Cultivated from the Cerebrospinal Fluid. *Lancet*, 1930, ccxviii, 612.

The strength of the suspension of the virus isolated from disseminated sclerosis was calculated by the authors from the following factors: the number of loops of the culture required to just flow under the top slip, the number of standard loops per cubic centimeter, the total area of the top cover slip, the area of the field under observation, and the average number of spherules per field.

After the administration of a virus suspension to patients and to rabbits, there was some evidence that inhibitory substances were formed in the sera. In monkeys, no similar evidence was found.

No complement-fixation phenomena could be observed in patients who were suffering from disseminated sclerosis or who had been treated with vaccines. Neither were they noted in the sera of virus-injected rabbits.

No immediate harm resulted from the injection of large doses of the unkillable virus, but in two monkeys certain systemic tract degenerations were detected in the cord about ten months later. The authors do not claim that these lesions were disseminated sclerosis, but believe that their presence was suggestive. The inoculations were made by the cistern and the intravenous route alone and by bath. In an attempt to damage the antitoxic functions of the liver, one of the monkeys was given daily rations of whiskey. However, he remained especially lively and in good color, and his liver was found histologically unaltered.

It seems highly probable to the authors that the best experimental results will be obtained by the intravenous route.

The biochemical observations upon myelin degeneration were made *in vitro* with the addition to the broth serum cultures of a 2 per cent suspension of lipid substance obtained by extracting a whole normal brain. Suitable control experiments were

carried out, and the conclusions drawn were based on the hydrogen ion concentration and the concentrations of amino acids and ammonia that obtained during the growth of the cultures.

The results indicated that cerebrospinal fluids containing this particular virus exert a specific hydrolytic action not only upon proteins and their disintegration products, but also upon the fatty constituents which occur in the nervous tissues. *In vitro*, there is split off from the latter a substance which can be detected in these fluids when organic degenerations of the nervous system are present.

KNUT H. HOUCK, M.D.

Woeik, H. A. Traumatic Anosmia (Die traumatische Anosmie). *Monatsschr. f. Unfallheilk.*, 1930, xxxvi, 1.

Traumatic anosmia is not so rare as is generally believed. The author has collected 126 cases from the literature. On the basis of a study of the condition by Onodi, he divides these cases into 4 groups: 65 cases of organic anosmia, 18 of functional anosmia, 25 of combined anosmia, and 18 of anosmia of unclear etiology.

Organic anosmia results from trauma to the skull with or without skull fracture. In the absence of a fracture of the skull the condition is explained by laceration of the olfactory bulb by contrecoup. The disturbance of smell is very frequently combined with a disturbance of taste. Disturbances of smell may follow also cerebral concussion. In the interests of the patient with skull injury as well as those of the insurance company, the nose and ear specialist should be consulted as soon as possible. The function of smell may be tested with a series of so-called olfactory substances such as asafetida, heliotropin, ichthyol, amyl nitrite, guaiacol, oil of lavender, powdered anise, musk, rubber, and yellow wax. Quantitative testing of the loss of the sense of smell may be accomplished with the olfactometer of Zwaardemaker or Onodi. The sense of taste should also be tested. The detection of simulation is sometimes very difficult. It is accomplished as a rule by the use of substances which have both a tactile (prickling or cooling) and an olfactory effect, e.g., ammonia and menthol. Recently, attempts have been made to detect simulation by registering the involuntary movements of facial expression (Klestadt, Loewenstein, and others).

In studying the relationship between anosmia and accident, disease of the accessory sinuses with chronic sequelae (ozæna) must be excluded if there is a possibility that such disease was present before the accident.

Non-traumatic anosmia may result from various infections, exogenic, toxic substances (mercury, chloroform, morphine, nicotine, alcohol), or occupational factors (irritating, caustic vapors in chemical plants).

In determining the compensation for anosmia, it is, of course, necessary to know if the patient's earning capacity has been decreased by the condition. It is important also to subject him to later examina-

tions as anosmia is capable of regression. Persons employed in the preparation of foods, druggists, chemists and gas workers are severely handicapped by the loss of the sense of smell. On the basis of the type of work, the decrease in earning capacity caused by complete anosmia is usually estimated as being between 5 and 25 per cent, but it may reach 40 per cent. GERLACH (Z)

Collier, J. Paralysis of the Oculomotor Nerve Trunks in Diabetes. *Proc Roy Soc Med, Lond*, 1930, LXIII, 627

The author reviews the symptoms of diabetes with ocular paralysis as seen in more than thirty cases. In the majority of the cases the ocular paralysis was the earliest symptom and led to the discovery of the glycosuria. None of the patients presented any signs of tabes or other nervous lesions. Most of them were over fifty years old, the age incidence of the ocular paralysis therefore corresponding to that of the vascular lesions of diabetes. The onset was rapid and painless and was not associated with tenderness on pressure on the eyeball or proptosis as are many of the sphenoidal fissure lesions.

Paralysis of the sixth nerve on one side was by far the most common complication. Next in decreasing order of frequency were paralysis of the third nerve on one side, bilateral paralysis of the sixth nerve, bilateral paralysis of the third nerve and combined paralysis of the third and fourth nerves on one side or of the third nerve on one side and the sixth nerve on the other side. The author has never observed isolated paralysis of the fourth nerve, ciliary muscle or light reflex.

In Collier's opinion the common coincidence of retrobulbar neuritis suggests a lesion of similar nature in the course of the oculomotor nerve, the facial nerves and the ophthalmic division of the fifth nerve.

In all of the author's cases the sugar content of the urine was high but under diabetic treatment the paralysis, glycosuria and glycemia decreased. Syphilis was not a factor. ROBERT ZOLLINGER, M.D.

### SPINAL CORD AND ITS COVERINGS

Batzdorff, E. Complete Paraplegia with Recovery (Gehheilte totale Querschnittslähmung). *Beitr z klin Chir* 1929, cxlviii, 320

During an attack of influenza a fourteen year old girl had fever for eight days. When she returned to school she complained of weakness, headache and vertigo and was sent home. These symptoms continued, but the fever did not recur. After four days she complained of bladder symptoms. The latter were relieved by urotropin. Two days later she suddenly developed complete urinary retention and presented signs of collapse. She was then unable to stand or move her legs.

On clinical examination the child did not look seriously sick. Her temperature and pulse were normal. However there was a complete paraplegia at

the level of the third to the fifth thoracic vertebra with complete paralysis of both legs, exaggeration of the patellar and Achilles tendon reflexes, considerable ankle clonus, a positive Babinski reaction, sensory disturbances, ataxia in the finger to nose test and jerking of the upper and lower extremities which was interpreted as a motor phenomenon of irritation. There was no generalized pain, but complaint was made of an occasional irregular pulling sensation in the back. The spine was extremely tender to pressure in the thoracic region. The pressure of the spinal fluid was not increased, but the fluid contained increased albumin and showed an increase in the number of cells to 150 per cubic centimeter, most of which were lymphocytes. The spinal fluid contained no blood and its Wassermann reaction was negative.

Lumbar puncture failed to improve the condition. The patient remained afebrile. After a few days decubitus lesions appeared on both heels.

The patient was then put in a Glisson sling and given large doses of urotropin. On the twelfth day she became able to pass small amounts of urine spontaneously, and on the fourteenth day she was able to lift her legs slightly. By the twentieth day practically all of the paralysis had disappeared and only a slight ankle clonus and Babinski reaction persisted.

This clinical picture of acute severe paralysis with rapid recession is characteristic of acute myelitis due to infection. It has been observed after infectious diseases, but the problem as to whether it is produced by direct action of the bacteria on the spinal cord or by a toxin has not been solved. Struempell believes that both possibilities are present. Acute myelitis beginning with bladder disturbances and severe motor disturbances is unusual, but a series of such cases have been reported in the literature.

In 1927, Dreyfuss reported a case which was similar to the author's case in practically every detail. LOEBE (Z)

### PERIPHERAL NERVES

Besversenکو, A. An Experimental Study of Traumatic Neuromata (Ueber traumatische Neurome [Experimentelle Untersuchung]). *Ann Chir Arch* 1929, LXIII, 352

The author studied the pathogenesis of traumatic neuromata in experiments on twenty dogs which he operated upon under the most aseptic conditions. He divided the sciatic nerve and treated the central stump by the injection of various chemicals and also according to the measures suggested by Krueger, Bardenheuer, and Bier for the prevention of neuroma. After from one to one and a half months he removed the central stumps, stained them by the silver impregnation method of Ramon y Cajal as modified by de Castro or by the Marchi method and examined them histologically. The findings demonstrated that none of the recommended methods except that of Fedorov prevented neuroma formation. The conclusions may be summarized as follows:

1 The so called traumatic neuroma is a physiological manifestation of regeneration of the central end of an injured nerve which is prevented from growing into its peripheral segment. The presence of a neuroma should be entirely painless.

2 A painful neuroma is the result of the invasion of regenerating axis cylinders into the unorganized scar tissue which subsequently incarcerates them.

3 The mechanical preparation of the damaged nerve trunk suggested by Krueger to prevent painful neuromata, which consists in mere crushing of the nerve with forceps, the method of Bardenheuer, in which, after being crushed, the nerve is turned back and fixed to the central stump by sutures through the epineurium, and the procedure of Bier, in which, after partial resection, the nerve is turned back, fixed to the central nerve stem, and cauterized,

are entirely inadequate and for practical purposes are to be rejected.

4 Because of the too rapid regeneration of the stump, the injection of 90 per cent alcohol into the central stump of the cut nerve will not prevent the development of painful neuromata.

5 The injection of 5 per cent formalin may sometimes prevent neuroma formation, especially when there are no postoperative complications in the wound.

6 The surest method of preventing neuroma formation seems to be the treatment of the injured nerve with carbolic acid as suggested by Fedorov. When neurectomy is done, the acid is applied to the surface of the cut nerve and injected  $\frac{1}{4}$  cm deep into the central end. When neurotomy is done, it is applied only on the cut surface. G. Aurov (Z).

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Schnitzler, J. A Critical Discussion of the Operation for Breast Carcinoma (Kritisches zur Operation des Mammacarcinoms) *Wien klin Wchnsch*, 1929, 10, 156

With the exception of the Halsted method there is no difference in the risk of the various operations for cancer of the breast, the operative mortality is very little over 1 per cent.

The classification of cases of cancer according to the stage of advance of the lesion is of advantage only in the compilation of statistics and even for this it is of very limited value. It should be applied only to cases operated upon. The inclusion of cases not operated upon permits the mentality of the population and the attitude of the physician to exert a decided effect upon the end results.

Of 20,000 cases of cancer of the breast collected from English reports 3,549 were operated upon radically. One third of the patients were alive three years after the operation. Two thirds of those surviving after three years represented the first stage of the disease according to Steintal, one third, the second stage, and only a very few the third stage. The life expectancy of a woman fifty-four years of age who is operated upon for cancer of the breast is five and three fourths years if the stage of the disease is disregarded whereas her normal life expectancy would be nineteen years. If she is operated upon in the early stage of the disease, her life expectancy is twelve and one half years. If she is untreated, it is three and one half years. Krecke reported that 23 per cent of the patients he treated surgically were alive from ten to fourteen years and 18 per cent after twenty years after the operation. Hesitancy in describing a cure as permanent is justifiable as recurrences may develop twenty years after operation.

Breast cancer varies greatly in its malignancy. A thirty-year-old unmarried woman developed in the right breast a tumor the size of a walnut, which was movable and at examination was found to be an adenoma showing foci of malignant degeneration here and there. The axillary glands were not involved. After radical operation the patient remained well for four years but then reappeared with a recurrence larger than a walnut in the right clavicle. Several months later she died. On the other hand in the case of an elderly woman the entire breast was transformed into a hard tumor which was adherent to the skin and muscles, the glands above the clavicle were infiltrated and nodules were widely distributed in the skin. Approximately the same picture had been presented five years previously.

The carcinoma has either a benign or a malignant character from the start. In one case operation after

three years is still an early operation while in another it is performed in the late stages of the condition even after three months. Korteweg believes that cleaning out the axilla without extirpating the breast muscles or the glands above the clavicles may improve the late results. In the prognostically unfavorable cases the more radical operation reduces local recurrences even though it cannot prevent the end result from internal metastases. The prognosis is especially unfavorable in the cases of patients with a hereditary tendency toward breast carcinoma. In young persons the disease is usually, though not always more malignant than in older persons. The prognosis is to be regarded as unfavorable when the histological picture shows many irregular and direct nuclear divisions.

The author advises roentgen castration of all women under the menopause age who are given irradiation after operation for cancer of the breast. He has been favorably impressed with this procedure as well as with postoperative irradiation therapy in general. Reynes reported a case in which apparent healing of a bilateral severe breast cancer occurred within five months after removal of the uterus and ovaries. Moreover, spontaneous recovery occasionally occurs. The results of irradiation treatment alone are not such as to justify the substitution of irradiation for operative treatment. Hirsch obtained surprisingly good results when he extirpated the breast tumor without removing the axillary glands and then inserted radium in the axilla. Of 22 patients so treated 21 have remained well for three years. In inoperable tumors, X-ray treatment is at times surprisingly successful. Operation in cases with involvement of lymph glands above the clavicles and the removal of supraclavicular glands which show involvement some time after the breast operation have never given the author good results. Of the women with such glandular involvement who were operated upon in the Kuettners Clinic, none was alive three years after the operation.

The skin overlying the tumor should always be removed for a distance of at least the width of the hand. According to anatomy and clinical experience, there is no necessity for removing the nipple.

For biopsy, circumscribed tumors should be removed entirely, the excision of a piece of the tumor is absurd. If the examination reveals malignancy, radical operation should be done at once.

The author is of the opinion that psychic depression may cause latent metastases to become manifest. In some cases metastases extend astonishingly slowly. Schnitzler knows of a case of vertebral metastasis which already have run a ten-year course.

In conclusion the author says that it is doubtful whether we are justified in refusing to perform the

less radical operations which the patients will alone consent to, since even such procedures may be followed by freedom from recurrence for years

STREISSLER (Z)

### TRACHEA, LUNGS, AND PLEURA

Adams, W E, Van Allen, C M, and Livingstone, H M. Bronchial Injury and Repair. *Ann Surg*, 1930, xci, 342

The authors studied the repair of the bronchi following cauterization with the silver nitrate stick and the thermal cautery. In most cases there was complete necrosis of the bronchial wall with regeneration of only the epithelial lining. Repeated thermal cauterization resulted in complete stenosis of the bronchial lumen. SAMUEL PERLOW, M D

Oberlin, S. The Surgical Treatment of Pulmonary Tuberculosis at the Thirty Eighth French Surgical Congress (Le traitement chirurgical de la tuberculose pulmonaire au 38<sup>e</sup> Congrès Français de Chirurgie). *Arch méd chir de l'appar respir*, 1929, iv, 499

At the thirty eighth French Surgical Congress, thoracoplasty and phrenicectomy were approved as methods of collapsing the tuberculous lung. These operations may be performed for either pulmonary or pleural indications. Surgery is justifiable in about 5 per cent of cases of pulmonary tuberculosis.

The pleuroparietal separation of Tuffier was not much discussed. However, Divis, of Prague, reported that he uses it with the German modification, i e, he performs extrapleural pneumolysis with tamponade. Of ten patients so treated, nine were benefited and one died. This detachment applied to the apex of the lung by a special technique he came apicolysis and has been much favored in Belgium. Sebrechts, of Bruges, reported its results in ninety five cases in which the pectoral muscles were used for the tamponade. With this operation he sometimes combined others. Forty two per cent of his patients can be considered cured or on the way to recovery. Lauwers, of Courtrai, stated that he performs apicolysis, not by pleuroparietal separation with the finger tip, but by resection. He has had numerous successful results.

It was agreed that thoracoplasty has its optimal indication in old, unilateral, and inactive ulcerofibrous lesions. It is indicated also for unilateral fibrocascous forms of tuberculosis, subfebrile or not, and for tuberculosis associated with hemothysis provided the general resistance is good. It may be used also to supplement an abandoned or insufficient pneumothorax. It is contra indicated by active tuberculosis and by the presence of any lesion, emphysematous or sclerotic, in the other lung. Age and pregnancy are not absolute contra-indications. When the patient's social conditions are poor it is not to be recommended.

Phrenicectomy may be employed alone when pneumothorax has failed or thoracoplasty cannot

be done. As an auxiliary to thoracoplasty it should be performed before the thoracoplasty. It may be used also to complete a pneumothorax or to supplement apicolysis or partial thoracoplasty. It may be performed even when the lesion is bilateral.

The technique of thoracoplasty was discussed with regard to anaesthesia, the operative approach, the extent of the costal resection, the performance of the operation in one or several stages, and the method of approaching the first rib. From a general survey of the results the conclusion was drawn that this operation has a very favorable influence in more than half of the cases and is followed by cure in from 25 to 35 per cent.

A few details of the technique of phrenicectomy were discussed. Berard, who obtained positive results with the operation in 41 per cent of fifty-three cases, is convinced that phrenicectomy alone is of incontestable value. Most of the surgeons discussing the operation, including Jeanneney, Simonin, Bonnal, and Arnaud, concurred in this opinion.

Mention was made of the increasing incidence of complicated empyemas developing in cases of pulmonary tuberculosis under treatment—empyemas which resist all medical treatment. The great majority of such empyemas are due to the effusions associated with artificial pneumothorax. Berard and Dumarest distinguish three types of effusions—the puriform, the pyoid or infective, and the septic or hyperinfected. Besides this bacteriological classification there is the anatomopathological classification of total and partial effusions, non fistulizing effusions, effusions which open on the chest wall or into the lung, and pachypleuritis. Operation is indicated when the lesion is unilateral, when there is absence of severe tuberculosis in other locations, and when there is relative integrity of the great systems.

Thoracoplasty is not at present indicated for puriform effusions. However, in hyperinfected effusions and in certain cases of infective effusions it will dry up the effusion by obliterating the pleural cavity. Berard holds that a preliminary pleurotomy renders the condition more favorable for thoracoplasty. Maurer and Rolland reserve pleurotomy for hyperinfected effusions. It is difficult to obliterate the suppurative cavity by an ordinary thoracoplasty, as a rule further resections are required after a short time. Sometimes it is necessary to perform a veritable pleurothoracotomy. When there is only a small pleural cavity which empties through a pulmonary fistula and has little effect on the general condition, a wide thoracoplasty is indicated. When there is a vast pyopneumothorax opening into the bronchi, an emergency thoracoplasty is indicated. However, Berard makes it a rule to establish preliminary external drainage in most cases. In twenty-nine cases of pleural suppuration treated surgically, Berard obtained positive results in 50 per cent and 25 per cent of these positive results were very good.

PACE

Wirth A. and Jaski G. K., von Experiences in 600 Phrenic Nerve Operations (Erfahrungen bei 600 Phrenicusoperationen) *Beitr z Klin d Tuberk*, 1929 LXIII 1

The 600 operations on the phrenic nerve which are reviewed in this article were performed at the Kaiserin Auguste Victoria Volkshelstætte at Lande shut. In the report of that institution for the year 1924 Wirth expressed the opinion that the phrenic nerve operation deserved wider recognition than had been given it up to then. If he was correct in his opinion it is necessary to determine whether the procedure can be used as an independent operation in lung surgery and to what extent it may be better than other methods especially pneumothorax. In the former use of phrenic exeresis as a supplementary operation to incomplete pneumothorax as a preliminary operation to thoracoplasty, and as an independent operation only in the treatment of unilateral cavities of the lower lobe and bronchiectases, the favorable effect of the procedure upon processes in the upper lobes became evident. Processes in the upper lobes were found to present almost as favorable a field for the operation as those in the lower lobes as even large apical cavities disappeared after the exeresis.

In the beginning the authors selected for the operation only cases in which an attempt to induce pneumothorax had failed or the other lung seemed to be incapable of sufficient function because of symptoms of active disease. Later they extended the indications even to bilateral extensive disease performing the operation in such cases on the side with the largest cavities. The results always encouraged further attempts. In these severe cases the effect is evidenced by detoxication of the body resulting from immobilization of the main focus, contraction of the cavernous pulmonary area, and improvement in the blood and lymph circulations. As a result of the complete change in the organism, striking improvement occurred also in the other lung. In recent years the authors have attempted exeresis of the phrenic nerve also in cases which were suitable for pneumothorax treatment but in which the ambulatory continuation of the pneumothorax would have been rendered very difficult on account of economic factors. On the basis of their favorable results they have come to change their opinion with regard to the indications of exeresis of the phrenic nerve and pneumothorax.

In the cases reviewed the indication for the two procedures combined was the usual one namely incomplete pneumothorax due to adhesions to the diaphragm or at the apex. The authors believe that phrenic exeresis is indicated also when collapse of a pneumothorax is associated with deficient expansion of the lung. Of special interest was the observation that exeresis of the phrenic nerve performed after pneumothorax was often much less effective than when it was performed as the primary operation, probably because of indurations adhesions and loss of elasticity of the pulmonary tissue and the dia-

phragm. On account of the favorable effects of phrenic exeresis, thoracoplasty may frequently be avoided. Every thoracoplasty should be preceded by exeresis. With regard to the mode of action of phrenic exeresis, the authors refer to other publications.

In support of the change in their opinion regarding the indications for pneumothorax and phrenic exeresis, the authors first report the results of pneumothorax in 49 cases treated during the year 1928. Most of these cases presented extensive unilateral pulmonary tuberculosis with cavity formation. Bilateral pneumothorax was induced in 3 cases. The best results were obtained in cases of early infiltration, however the method should be used only for cavities in the early stages of development—those associated with danger of dissemination—as for many early cases it is far too severe and is judged to be dangerous. In other cases pneumothorax is often applied too late and remains incomplete. Of the 3 cases in which bilateral pneumothorax was induced death resulted in 2 because of fresh bilateral infiltrations. Favorable results from bilateral pneumothorax are obtained only when the second pneumothorax is induced on the opposite side after from one and a half to two years.

Of the 49 cases of pneumothorax, premature collapse was caused by evadate or adhesions in 24. In 27 cases exeresis of the phrenic nerve was done after the induction of the pneumothorax. Seventy one per cent of the patients were able to resume their occupations, 20 per cent remained incapacitated, 8 per cent died, and 10 per cent became free from bacilli. Relative insufficiency of the pneumothorax was evident. The end results are much less satisfactory than the immediate results. Moreover, the procedure may be followed by unfavorable sequelae such as contraction of the lung, displacement of the mediastinum, adhesions of the costal pleura, and bronchiectasis and, no less than exeresis of the phrenic nerve may produce an irreparable condition. The refilling at intervals of four weeks constitutes a difficulty from the social point of view. The social justification for phrenic exeresis is at least as great as that for pneumothorax. The results of phrenic exeresis are no less favorable than those of pneumothorax.

Thoroughness and accuracy of the operation are prerequisites for satisfactory results. The best procedure is the typical exeresis of the phrenic nerve according to the method of Felix and Lebsche, in which nerve lengths up to 42 cm. are avulsed together with the not very rare (43 per cent?) accessory phrenic nerves. The removal of at least 12 cm. is necessary. For the prevention of embolism, the dorsal position with the head low is important. The operation is best done by specialists. Local or conduction anæsthesia is fully sufficient. For cosmetic reasons, a transverse incision is preferable to a longitudinal incision of the skin.

Most of the 600 cases operated upon by phrenic exeresis were severe cases. Two hundred and fifty three (42.2 per cent) were cases of extensive bilateral

pulmonary tuberculosis, and in 408 (68 per cent) there were large cavities. Fifty-two (12.7 per cent) presented cavities in the middle and lower field and 52 showed small cavities. In 262 cases (43.6 per cent) there was open tuberculosis.

Exeresis was done on the right side 311 times and on the left side 289 times. A number of cases were treated with pneumothorax. In 502 cases (82.7 per cent), an isolated unilateral exeresis was done. The operation was believed to be contra-indicated by tuberculosis of the intestine, decompensated heart lesions, and degenerative kidney disease. Moderate emphysema was not regarded as a contra-indication. A combination of the operation with subsequent roentgen therapy, as suggested by Bacmeister, is recommended.

Of 385 open cases, 102 (86.5 per cent) were closed. Of 420 patients operated upon, the pulmonary findings were improved in 340 and remained unchanged in 80. The general condition was improved in 349 cases and remained unchanged in 71. Seven patients (1.7 per cent) were rendered fully able to resume their work, 107 (25.5 per cent) to do moderate work, and 306 (72.8 per cent) to do light work. In 11 (1.5 per cent) of 727 cases, unfavorable results in the form of activation of the opposite side, and in 24, activation on the side of the operation, were noted. Sixty-nine febrile cases became afebrile. The erythrocyte sedimentation reaction was improved in nearly every case. The average increase in weight amounted to 5.2 kgm. The average duration of treatment was twenty weeks. When both pneumothorax and exeresis were done it was twenty-five weeks, and when thoracoplasty was performed it was forty-one weeks. Various complications interrupting the treatment are discussed, and failures are reported in detail.

Careful follow up investigations were made of 185 patients for periods up to five years. After from three to five years, from 40 to 50 per cent of the patients were still alive, and of these, from 26 to 35 per cent were able to follow their occupation. The later results proved to be better. Of 109 patients, complete disappearance of the cavity was found in 29 (26.6 per cent) and considerable improvement in 14 (12.8 per cent). In 22 (20.2 per cent) there was no change, and in 44 (40.4 per cent) the condition was worse. In all of 10 cases of early infiltration the result was completely successful. Twenty-eight (73.7 per cent) of 38 patients with the nodular cirrhotic form of the disease showed improvement. It was of interest to observe that of 185 patients examined after from three to five years the diaphragm was absolutely normal in 24 (12.9 per cent) although repeated roentgen examinations after the operation up to the end of the treatment revealed complete diaphragmatic paralysis.

The fate of patients treated by exeresis of the phrenic nerve is discussed in detail with special regard to such mechanical sequelae as displacement of the neighboring viscera with their subjective and possibly functional consequences. Attention is called

to the surprising mildness of the subjective and objective disturbances in the presence of considerable change in the position of the organs which was demonstrated on roentgen examination.

In summarizing, the authors draw the following conclusions:

- 1 The indication for exeresis of the phrenic nerve is presented only in cases in which conservative therapy has proved inadequate after a sufficiently long trial.

- 2 In cases in which the indication for pneumothorax is established—excluding the vital indication of uncontrollable hemorrhage—exeresis of the phrenic nerve is equally justified for disease processes in the lower middle, and upper lobes, for breaking down and already broken down early infiltrations, and for tertiary nodular, cirrhotic, cavernous disease. Exeresis of the phrenic nerve is to be preferred to pneumothorax because (1) it is a single intervention, whereas pneumothorax is often very difficult and takes years, (2) it is less dangerous than pneumothorax, and (3) it causes less interference with the patient's occupation.

- 3 In unilateral cases in which, after from one to two months, no noteworthy improvement is apparent following phrenic exeresis, pneumothorax is to be considered. If it fails or is contra-indicated on account of the presence of marked induration and peripheral cavities, thoracoplasty is indicated.

- 4 Special indications for exeresis of the phrenic nerve are bronchiectasis, pulmonary abscesses, obstinate cases of pleurisy with continuous symptoms, and especially the large field of bilateral pulmonary tuberculosis in which the induction of pneumothorax and thoracoplasty is contra-indicated from the beginning. Following phrenic exeresis on the more diseased side, striking improvement is often noted on the other side. Therefore when the effect of phrenic exeresis is not sufficient for a cure, some of the cases may be rendered suitable for later pneumothorax and thoracoplasty.

- 5 Exeresis of the phrenic nerve as a complement to incomplete pneumothorax in the presence of adhesions in the upper as well as the middle and lower lobes is being gradually abandoned, as in such cases, which suggest the existence of marked adhesions, the treatment should be begun with exeresis of the phrenic nerve.

- 6 Exeresis of the phrenic nerve in beginning collapse of a pneumothorax should be reserved for cases with faulty expansion of the lung or those in which the pneumothorax has not produced a sufficient effect.

- 7 In pyopneumothorax and empyema, exeresis of the phrenic nerve must be done previous to thoracoplasty if the greatest possible contraction of the cavity is to be obtained.

In consideration of all the medical, social and economic factors, the authors recommend, in contrast to the indications recognized formerly and even today by the majority of lung specialists, the following sequence of procedures: (1) exeresis of the phrenic



nerve (2) an attempt at pneumothorax, (3) thoraco plasty. They believe that they are properly evaluating the procedures in severity and importance.

An appendix to the report gives the histories of several very instructive cases and is illustrated with roentgenograms.

STRAUB (Z)

### ESOPHAGUS AND MEDIASTINUM

Bakay, L. A New Contribution on Complete Surgical Reconstruction of the Esophagus (Neuer Beitrag zur vollständigen Speiseröhrenplastik). *Orvosi közl.*, 1929, xiv, 23.

The author reports two cases of total reconstruction of the esophagus which came to autopsy about six months and three years respectively after successful completion of the plastic operation. The new esophagus which because of cicatricial contraction of the stomach had been made by uniting the excluded jejunum to the cervical portion of the esophagus by a pre thoracic skin tube by the Roux-Lerer-Wullstein procedure, functioned well in both cases. At autopsy it showed no stenoses, its lumen was uniform, the transition from skin to mucous membrane was scarcely discernible macroscopically, and the inner surface of the skin tube was smooth, mucus coated, and slippery.

Histological examination showed complete union of the skin tube with the intestine and esophagus. The epithelium of the skin tube was changed. The horny layer was absent. The hair follicles and sebaceous glands had undergone regression, but the sweat glands were better preserved. In addition imitation manifestations such as round cell infiltration in the corium and patchy elongation and irregular course of the papillae were observed. These were most marked at the line of union of the skin tube and esophagus. Nowhere however, were there atypical proliferations or precancerous changes. Wherever isolated groups of epithelial cells were found in the connective tissue, closer examination showed them to be the remains of hair follicles that had undergone regression. This was evident also from their regular distribution and the presence of the erector pili muscles.

Altogether these observations showed that skin is suitable for use in reconstruction of the esophagus,

that it not only meets the demands of function well but even adapts its structure to the new function.

POLYA (Z)

Farrell, J. T., Jr. Roentgen Diagnosis of Cancer of the Esophagus. *Radiology*, 1930, xiv, 232.

Farrell says that the present status of the treatment of cancer of the esophagus is unsatisfactory because of the impossibility of obtaining a cure in the late stage at which patients with this condition come under observation. Even the slightest difficulty in swallowing should be investigated thoroughly before it is regarded as inconsequential. Roentgen examination is the most generally practical method for the diagnosis of diseases of the esophagus.

In a series of seventy-seven cases of cancer of the esophagus the lesion occurred fifteen times in the upper third, thirty times in the middle third, and thirty-two times in the lower third.

A filling defect was observed in all of the cases. It was smooth in only one. Narrowing at the site of the growth was also a constant finding. Slight dilatation of the proximal portion of the esophagus was present in seventy-three cases. In the four other cases no relationship was apparent between the site of the growth and the absence of dilatation.

Increased peristalsis is not a prominent feature of cancer of the esophagus. Metastases and infections of the lower lobe of the lung are occasional complications. Erosion of the trachea or a bronchus with the formation of a fistulous tract is rare.

The organic lesions which must be differentiated from cancer of the esophagus are cicatricial stenosis, stenosis from external pressure, esophageal varix, diverticulum, benign esophagitis, foreign body and extension of gastric malignancy. The functional conditions to be differentiated are phrenospasm or so-called cardiospasm, central nervous system conditions such as bulbar palsy, localized lesions of the nerves controlling the muscles of swallowing, globus hystericus, and hysteria.

In all conditions in which a positive diagnosis as to the presence or absence of organic disease of the esophagus cannot be made by roentgen study, esophagoscopy should be employed.

ADOLPH HARTUNG, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Porzelt, W. The Question of the Origin of Free Omental Torsion in the Abdominal Cavity (Zur Frage der Entstehung der freien Netztorsion in der Bauchhöhle) *Zentralbl f Chir*, 1930, p 400

Many of the recently reported cases of omental torsion were ascribed to an inguinal hernia in which, apparently, omentum was contained previously (Schwarz, Brandetzky, Kahnt). This etiology does not always apply. In 100 cases of torsion of the omentum, Juengling found 15 in which there was no recognizable cause for the inflammation and twisting.

At operation on a man thirty six years old who presented the picture of acute appendicitis, the author found a repeatedly twisted, fibrin covered mass of omentum. The appendix was not greatly altered. The omental mass was removed at its pedicle. The subsequent course was uneventful. No hernia was demonstrable in this case, but there was a co-existent chronic disease of the heart muscle.

As a cause of omental torsion in general, the author assumes an epiploitis due to incarceration of the omentum in a hernial sac or extension to the omentum of inflammatory processes in surrounding parts (peritonitis, etc.). It is conceivable also that vascular disturbances (embolism, thrombosis) may lead to such an inflammation. The latter may have been present in the case herewith reported as the patient had a heart lesion. When the epiploitis subsides it may leave a firm omental mass which tends to form a pedicle and under certain circumstances may lead to torsion. In Juengling's opinion, the pedicle formation is congenital. Schomhurg attributes omental torsion to an epiploitis of idiopathic origin. Sellheim believes that it may be brought about by repeated rotations of the body, the twisting action of the omentum being continued after the movement of the body has ceased. E. WILMS (Z)

## GASTRO-INTESTINAL TRACT

Rieder, R. Clinical Manifestations and Therapy of So Called Cardiospasm (Klinik und Therapie der sogenannten Kardiospasmus) *Deutsche Zeitschr f Chir* 1930, ccxxi, 47

According to experimental and clinical experience, the term "cardiospasm" is misleading as the condition to which it is applied is not a spasm but rather a closure of the cardia in which the muscles are at rest. It is probably due to a functional or organic disturbance of the vagus. Mechanical factors may simulate the picture.

The author reports nineteen cases, in eleven of which a cause could be determined. In eight, the

condition was due to an illness, and in three, to a psychic trauma. In two, there was a co-existent gastric ulcer. One of the gastric ulcers was symptomless and resulted in a fatal perforation. The other was perhaps an artificial ulcer caused by operative dilatation.

Sounding should be controlled fluoroscopically. In doubtful cases, œsophagoscopy should be done. The possibility of passing a bougie does not signify cure, often the cardia relaxes and the more intense the stimulus the more readily it does so.

The pain is not explained, it may persist even when the sound is in place.

In the cases reported, conservative treatment was used at first, but was not successful. Dilatation by the Gottstein method and the bougie was therefore done. This resulted in considerable improvement in seven cases, but not in a clinical or roentgenologically demonstrable cure. In three cases it failed. In one case the formation of a fistula and dilatation by the Gottstein method resulted in a cure which was demonstrable with the X ray. Stark's dilatation, which was done in three cases, was followed by subjective improvement every time. In one case mediastinitis developed, but recovery took place and Heller's operation was done later. One patient who had two dilatations was cured for four years. Resection of branches of the vagus in one case made the condition much worse and necessitated the Heller operation. In one case a cardioplastic operation, performed because of suspected ulcer, did not affect the condition. In all of the eight cases operated upon by the Heller method there was improvement. The clinical result of the operation often does not become apparent until after some time. The author has had no experience with the operative method of Heurnski, but regards it as promising.

Rieder concludes that the Heller operation is the best procedure as it results in a cure in 50 per cent of the cases and in marked improvement in the others.

C. E. JANCKE (Z)

Ferrotti, G. The Effect of Resection of the Extrinsic and Intrinsic Nerves of the Stomach on the Development of Postoperative Peptic Ulcer (Sulla influenza che alcune resezioni dei nervi estrinseci ed intrinseci dello stomaco possono esercitare in rapporto alla produzione dell'ulcera peptica post-operativa) *Ann ital di chir*, 1930, ix, 158

In one series of experiments carried out on dogs, gastro-entrostomy with exclusion of the pylorus was supplemented by circular extramucous myotomy of the prepyloric region with section of the pyloric artery and nerves. In another series it was supplemented by bilateral subdiaphragmatic section of the vagus.

While the myotomy greatly reduced the incidence of postoperative peptic ulcer it did not prevent the development of the lesion entirely, it caused hypotonia and dilatation of the stomach and delayed emptying and dilatation of the small intestine, and it exerted an unfavorable effect on the nutrition of the animals.

In the animals subjected to bilateral subdiaphragmatic section of the vagus postoperative peptic ulcer never developed and nutrition remained excellent.

The author believes that the results of myotomy were less satisfactory because the operation is more complex than subdiaphragmatic section of the vagus and acts not only on the vagus but also on the sympathetic and the intrinsic nerves, thereby disturbing the trophism of the organ and partly neutralizing the good effects of the hyposecretion and hypopertistalsis which it brings about.

ANDREW G. MORGAN, M.D.

**Haberer H. von.** Reflections on Our Failures After Resection for Gastric and Duodenal Ulcer (Be trachtungen ueber unsere Mi serfolge nach Resektion wegen Magen und Duodenalgeschwueren) *Zentralbl f. Chir.* 1930, p. 66.

The late results of resection are poor when the operation is performed in the absence of indications for it. Therefore they cannot be good in cases of gastritis. They are poor also when the operation is performed on the basis of misinterpreted roentgenograms. When resection is definitely indicated its results may be unsatisfactory because it is not done thoroughly enough. Both the pylorus and the antrum must be resected. Sometimes the results are poor because the proper postoperative dietary treatment is not given or is not continued for a sufficient length of time. It should be continued for nine months. When it is stopped too soon disturbances are caused by the changes in the mucosa which are always present. Another cause of failure is a faulty technique. In none of the author's cases has stenosis followed the Billroth I operation. This sequela is a possibility when coarse needles and suture material are employed when continuous suturing is done when vessel stumps are sutured over the anterior suture line and when the duodenal lumen is not properly used for the anastomosis. After the Billroth II operation failure is to be expected if too low a loop was employed.

The failures of resection include recurrent ulcer or peptic ulcer of the jejunum. Peptic ulcer of the jejunum is rare after the Billroth II operation. Recurrent ulcers after the Billroth I operation are usually overlooked ulcers. To prevent such sequelae the surgeon must watch for swollen glands.

The author describes in detail his method of performing the Billroth I operation. He warns against operations especially re laparotomies on nervous patients without organic changes. He rejects Wanke's theory as to a time limit of ulcer operability. He states that in 1,305 cases in which

resection was done at Innsbruck a recurrent ulcer developed in 3 in which the Billroth I operation was done soon after its introduction and in which, even at the end of the operation a recurrence was feared because the resection was believed to have been insufficient. In 750 cases in which resection was done at Graz, there was 1 recurrent ulcer, which developed below the anastomosis. The author cites also a case in which a peptic ulcer of the duodenum developed after a resection for peptic ulcer of the jejunum with terminolateral anastomosis between the end of the stomach and the descending duodenum. In another case a peptic ulcer was suspected from the presence of a contrast spot in the roentgenogram of the duodenum. Altogether, among 2,310 cases of resection a proved or roentgenologically suggested recurrent ulcer developed in 15 (0.6 per cent). In Duesseldorf, 20 per cent of all resections are secondary interventions after operations performed elsewhere for ulcer. KOTT (Z)

**Pendergrass, E. P.** Prolapse of Pedunculated Tumors and Gastric Mucosa through the Pylorus and Duodenum. Roentgenological Diagnoses. *J. Am. M. Ass.*, 1930 XLIV, 317.

A pedunculated tumor prolapsing through the pylorus may readily be diagnosed by X-ray examination. It may be a papilloma, fibroma, adenoma or polypus. In most of the author's cases the neoplasm was an adenoma or polypus. Tumors of this type arise from the mucosa near the pylorus and vary in diameter from 1 to 2 cm. The pedicles may be short or long and the tumors may be multiple or single. Large pedunculated tumors arising from the gastric mucosa do not tend to prolapse, but are prone to ulcerate and frequently cause severe secondary anemia which is often diagnosed as of the pernicious type. In the author's series of cases there were six instances of severe secondary anemia diagnosed as pernicious anemia. Malignant changes in the tumors were proved in seven cases and suspected in several others. All such tumors should be regarded and treated as potentially malignant.

The origin of pedunculated tumors may often be a low grade inflammation of the mucosa causing by hypertrophy of the mucosa which is increased mechanically by the peristaltic contractions of the stomach and the pressure of the gastric contents pushing outward through the pyloric sphincter.

On fluoroscopic examination the filling defect is not easily demonstrated. Peristalsis is not interfered with unless the tumor has undergone malignant degeneration. The stomach usually shows a six hour residue the amount of which varies directly with the degree of pyloric obstruction. In roentgenograms made with the patient in the prone position a central filling defect in the duodenum is seen. This may be circular or irregularly circular. No defect is noted in the pyloric region of the stomach. In every case of unexplained anemia a careful X-ray study of the gastro intestinal tract should be made.

JOHN W. NUZZO, M.D.

Moulounguet-Doleris and d'Aubigné Two Cases of Total Volvulus of the Small Intestine and the Right Half of the Colon (Deux observations de volvulus total de l'anse ombilicale, grêle et moitié droite du colon) *Bull et mém Soc nat de chir*, 1930, lvi, 122

The first case reported was that of a man twenty-one years of age who was transferred from the medical service to the surgical service of Fredet with a diagnosis of duodenal ulcer associated with extreme malnutrition. The patient was extremely emaciated and dehydrated and appeared moribund. He vomited incessantly a bilious material. The first attack of vomiting had occurred at the age of eleven years, and since then there have been several such attacks which lasted several days and caused a serious state of malnutrition. The vomiting was associated with pain, but hæmatemesis had never occurred. Between the attacks there were periods of perfect health when the patient digested all food well. This had been the case particularly during his military service.

In spite of the extreme gravity of the general condition, immediate operation was undertaken. The medical diagnosis of duodenal ulcer did not seem satisfactory. The abdomen was sunken, but there were no definite findings.

Median sub umbilical laparotomy performed under local anaesthesia revealed a network of distended veins in the transverse mesocolon and omentum. This led to examination of the prevertebral region. At the level of the mesenteric insertion a large mass was felt. The stomach was normal. The cæcum was flat, free, and near the median line. A complete volvulus of the small intestine and the right colon had occurred. The volvulus was explained by the fact that the common mesentery was free, there being no attachment to the posterior abdominal wall. The only support was provided by the superior mesenteric vessels. The torsion had occurred in a clockwise direction with the cæcum passing in front of the small intestine. After its correction, the hand formed by the rotated mesenteric root disappeared and the duodenum passed freely behind the superior mesentery which previously had compressed it. However, the duodenum still remained considerably distended. After detorsion of the mesenteric vessels the veins in the transverse mesentery quickly diminished in volume, but the cæcum remained in the median line. The abdominal wall was closed with bronze wire.

Following the operation the patient ceased vomiting and regained his weight. Several months later a colectomy was performed under general anaesthesia and a fibrous band which had been constricting the second portion of the duodenum was severed. Roentgenographic examination later showed complete return to normal, and clinical recovery was complete and permanent.

The second case reported was that of a man fifty-five years of age who entered the hospital with an acute attack of abdominal pain which had begun

twenty-four hours previously. The pain was very severe and persisted in the form of a periumbilical colic. There was complete cessation of bowel movements and passage of gas, but no vomiting. The temperature was 38 degrees F and the pulse 100. The face showed a leaden pallor. The abdomen was markedly distended, and peristaltic waves were visible in the right upper quadrant. The patient had never suffered from digestive disturbance, constipation, or melæna. Three months previously he had had a similar attack which terminated favorably. The pre operative diagnosis was volvulus of the sigmoid colon.

A median sub umbilical laparotomy was performed under spinal anaesthesia. When the peritoneal cavity was opened, the greatly distended cæcum presented through the incision. The ascending colon disappeared under the liver beneath a large adhesion and was covered by a mass of small intestine. The descending colon was flat, and in its upper portion was covered by the small intestine and the adhesive band. The entire mass had made a complete turn in a clockwise direction about the mesenteric vessels as an axis. The cæcum had passed to the left and then to the right completely across the root of the mesentery.

The intestinal mass was rotated back 360 degrees. The colon was then in its normal position, but was entirely mobile because of the long mesentery. Immediately after the detorsion a large quantity of gas and faeces was expelled from the anus. Because of the enormous intestinal and cecal distention a cæcal fistula was made. For several days after the operation the patient showed improvement and gas and faeces passed through the cæcal opening and by anus, but on the fifteenth day the faeces gradually changed for the worse, the abdomen became distended, no results were obtained by enemas, and the patient died with toxic manifestations.

The author states that total volvulus of the small intestine is an exceptionally rare occurrence, but since Broca reported his case in 1901 several other cases have been recorded. The volvulus is due to defective union of the right colon with the root of the mesentery which leaves a loop of intestine free on a long pedicle. Although it is a congenital defect, the time of development of the symptoms varies from infancy to adult life.

The symptoms fall into two groups: those due to chronic duodenal stenosis and those due to acute intestinal occlusion. These two distinct types are illustrated by the cases reported in this article. The duodenal manifestations are chiefly bilious vomiting and dilatation of the stomach. The symptoms of intestinal obstruction are sometimes preceded by attacks of partial intestinal obstruction.

As the clinical diagnosis may be difficult, the possibility of the condition should be kept in mind and an exploratory laparotomy should be performed instead of the usual caecostomy. It is interesting that in the majority of cases the torsion was clockwise. There may be a complete turn, one and one

half turns or even two complete turns. At operation, it is necessary to bring the entire mass out of the abdomen, find the cæcum and then unwind the intestines in a counter clockwise direction. Usually this is done without great difficulty. Fixation of the intestine may be deferred to a later date after the general condition has been improved. Operative intervention offers the only chance for recovery. Of eight cases in which detorsion was done, six were cured. The two deaths were due to acute intestinal obstruction. The latter condition is more serious than chronic duodenal stenosis.

In the discussion OKINCZC reported briefly a case of complete volvulus of a primitive intestine in an adult. The cæcum, as large as a head was in the left hypochondrium. Detorsion was performed and a cæcocolopexy was done. Complete cure resulted. JACOB E. KLEIN, M.D.

Bockus, H. L. Chronic Duodenal Stenosis. *North West Med*, 1930, XLV, 57, 109.

Duodenal stenosis is due, in about 75 per cent of the cases, to intermittent occlusion of the duodenum by such structures as the superior mesenteric vessels. It may be caused also by penduodenal bands and adhesions or the pressure of mesenteric glands enlarged by tuberculosis, syphilis, or malignancy.

The symptoms include gaseous distention, belching, rumbling, constipation or diarrhoea, pain followed by vomiting, headache, migraine, malaise, neuralgia, exhaustion, fatigue and nervousness.

The diagnosis is based on the history, the findings of physical examination and the demonstration of dilatation of the proximal duodenum by X-ray examination.

Medical treatment should be tried first. This should include rest in bed flat on the stomach or on either side with the foot of the bed elevated. Regulation of the diet is most important. The diet should be smooth and high in calories and vitamins. Small quantities of food should be given at frequent intervals. After the patient's state of nutrition has been improved, an ambulatory regime may be followed in which the patient lies down for an hour after each meal. Resistant mechanical obstructions require surgical correction. Duodenojejunostomy or colon fixation may result in great relief.

M. HERBERT BARKER, M.D.

Brisset. Total Intussusception of the Colon in a Man of Forty Six Years. Colectomy and Colostomy. Secondary Closure of the Artificial Anus. Recovery. (Inagination colique totale chez un homme de quarante six ans. colectomie d'urgence avec mise des deux bouts à la peau. cure secondaire de l'anus guérison). *Bull. et mém. Soc. nat. de chir.* 1930 LXI, 2, 3.

The patient was a man forty six years old who entered the hospital with the diagnosis of acute appendicitis. That morning he had had an attack of acute abdominal pain in the right lower quadrant associated with vomiting and abdominal rigidity.

During the past year he had had three similar attacks associated with vomiting and complete arrest of feces and gas.

On examination, the region of the left colon seemed somewhat increased in volume and there was pain on palpation in the region of the sigmoid. On rectal examination an obstacle was felt at the finger tip. The pulse was 80 and the temperature 37.6 degrees C.

As the condition improved, operation was deferred until the next day in order that the colon might be studied with the aid of a barium enema. However early in the morning the patient was seized with an attack of tenesmus and passed a stool of pure blood. A diagnosis of intussusception was then made.

Median laparotomy performed with a transverse incision to the left disclosed an invagination of the small intestine into the middle of the descending colon which could not be reduced without danger of rupture. A colectomy with resection of the small intestine 40 cm. above the ileocecal valve was performed. As ileosigmoidostomy was deemed inadvisable the two ends of intestine were brought out to the skin at the lower end of the midline incision. The abdomen was then closed and a Paul tube inserted in the small intestine.

Examination of the removed specimen showed that both an ileocecal and a colocolic invagination had occurred.

On the following day, gangrene developed in the lower half of the exposed small intestine and it was found necessary to place a dressing to protect the line of the incision. The highest rectal temperature recorded was 38 degrees C. After separation of the gangrenous portion an attempt was made to close the intestinal ends by using an enterotome but was not successful. It was necessary to do another operation and close the artificial anus by suture. Primary healing resulted and except for a ventral hernia at the transverse incision the patient completely recovered. JACOB E. KLEIN, M.D.

Bell, L. P. Carcinoma of the Large Bowel Not Including the Rectum and the Rectosigmoid. Choice of Operative Procedure. *Arch. Surg.* 1930 XLV, 491.

Bell discusses the incidence, pathology, location, and operative treatment of carcinoma of the large bowel above the sigmoid. Of nine cases reviewed by him three were those of brothers with carcinoma of the cecum. Bell believes that postoperative irradiation is indicated in all cases of carcinoma of the colon for the prevention of recurrence. The article contains eleven illustrations of operative procedures. CARL R. STEINLE, M.D.

Dorsey, A. H. F. The Bacteriology and Pathogenesis of Appendicitis. *Surg., Gynec. & Obst.* 1930 LI, 502.

Streptococci isolated from diseased appendices removed at operation on human beings have a most striking resemblance morphologically and culturally.

to the streptococci isolated from the nasopharynxes of patients suffering from appendicitis and to those obtained from the tonsils of patients with arthritis. Therefore it is impossible to determine the relation of streptococci isolated from these sources to the disease from which the patient is suffering unless animal experiments are carried out. The author's data indicate that, despite the morphological and cultural similarity of these streptococci, their localizing power varies greatly. In his studies on rabbits, the proportion of lesions in the appendix and in the joints varied with the source of the material injected. When material obtained from the nasopharynx or the appendix of patients who had appendicitis was injected into these animals, the incidence of localization in the appendix was high whereas the incidence of localization in the joints was low. On the other hand, when material from the tonsils of patients with arthritis was injected into the animals, the incidence of localization in the joints was high and the incidence of localization in the appendix was low. This finding is entirely in accord with the observations of Rosenow in studies of appendicitis and adds further support to the large mass of data which has been accumulated to substantiate the theory of elective localization.

It is emphasized that the use of original cultures, either pure or mixed, is an important factor in the success of studies of localization of bacteria. This is evident from the fact that cultures which had previously produced appendicitis lost their elective localizing power for the appendix after cultivation on artificial media for several months.

Diplococci and streptococci in short chains were successfully demonstrated by the modified gram stain in sections of appendices from human beings and in the appendices and mesenteric lymph nodes of rabbits.

The relation of focal infection to appendicitis is definitely shown by the marked contrast between the degree of localization in the appendix of streptococci found in the nasopharynx of patients who had appendicitis and of patients who had arthritis. It seems, then, that streptococci more often than colon bacilli or other bacteria isolated from the diseased appendix have a definite etiological importance in appendicitis, that the nasopharynx may be the source of the streptococcus having this localizing power, and that appendicitis is commonly a hematogenous intramural streptococcal infection.

Fanucci M. Primary Sarcoma of the Descending Colon and Sigmoid (Sarcoma primitivo del colon discendente e del sigma). *Polislin*, Rome, 1930, LVIII, sez. chir. 53.

The case reported was that of a boy seventeen years of age who was seized with attacks of pain in the left iliac fossa associated with vomiting and fever. When the patient was brought to the clinic after two months he was cachectic and constipated and had a temperature of 38.5 degrees C. Examination revealed abdominal spasm and tenderness

There was no blood in the stools. Under expectant treatment, the spasm diminished. A large elastic tumor was then felt in the left lower quadrant of the abdomen. Roentgenological study showed no intestinal abnormality.

At operation, it was found that the tumor occupied the descending colon and a portion of the sigmoid and had invaded the wall of a loop of jejunum. Resection was done. Death occurred the next day.

The tumor extended over 22 cm. of the bowel in the form of a diffuse thickening of the intestinal wall of from 2 to 4 cm. The outer surface was irregularly nodular, grayish, and in places ulcerated. The lumen of the bowel was not narrowed. Histologically, the tumor was made up of small, round, uniform embryonal cells which infiltrated and distended the wall of the gut. Only the mucosa remained intact. C. D. HAAGENSEN, M.D.

Glatzel, J. Pathological Torsion of the Sigmoid Flexure (Torsion pathologique de l'S iliaque). *Chir. clin. Polonica*, 1929, I, 133.

Torsion of the sigmoid flexure is much more common in eastern Europe than in western Europe. It is not peculiar to the Slavic race as it frequently occurs also in persons belonging to the Semitic race. The essential factors are exaggerated length of the sigmoid loop and especially a certain shape of its mesentery. These are congenital. The result of repeated torsions is the formation of cicatrices. Cicatrices greatly facilitate the occurrence of pathological torsions, but do not play the principal role which is generally ascribed to them.

The diagnosis of torsion of the sigmoid flexure is often easy in recent cases because of meteorism of the twisted loop which occurs early and persists for a long time. In most cases the loop of twisted and swollen colon presents an exaggerated peristaltic movement in the form of contracture. This movement is to be considered an almost infallible sign of intact vitality and impermeability of the intestinal wall.

As soon as the diagnosis is established, the abdominal cavity should be opened. If the intestinal wall is intact, the loop should be untwisted and emptied. Untwisting does not prevent new and frequent torsions. Resection of the sigmoid loop is the only sure way of preventing recurrences. The best conditions for resection are presented two or three weeks after detorsion. When resection with lateral entero-anastomosis is done at that time it gives excellent results. When peritonitis develops, it is possible that immediate resection of the twisted loop may improve the prognosis. In some cases, however, the inflammatory process may subside after simple untwisting.

A gangrenous loop must be resected. The one stage procedure gives the best results, but necessitates circular enterorrhaphy. The two stage procedure should be reserved for the most serious cases.

Glatzel reports 154 cases of torsion of the sigmoid flexure and supplements his article with a bibliography of 167 references. PAGE

Ricard A. Abdominoperineal Amputation of the Rectum in Man with Routine Lowering to the Perineum (L'amputation abdomino-périnéale du rectum chez l'homme avec abaissement systématique au périnée) *J de chir* 1930 xivv, 177

Ricard reviews the anatomical structure and relations of the fibrous sheath of the rectum. This sheath is bounded at the back by the sacrococcyx, in front by the aponeurosis of Denonvilliers surmounted by the genital bed, and laterally, by the sagittal lamina of the rectum, the sacrorectogential layer of Farabeuf, the posterior portion of the hypogastric sheath.

In the lax cellular tissue which carpets the posterior surface of the sheath are the most important lymphatics and glands, the vascular and lymphatic hilum of the rectum. Hence separation of the rectum from the sacral concavity is an important stage in rectal extirpation. Toward the front it is the aponeurosis of Denonvilliers which closes the bed and serves as its wall. In the median line the layer of Denonvilliers adheres closely to the prostate and there is no preaponeurotic plane of cleavage. The lateral sheath of the rectum is composed of two distinct parts: at the back the nervous part in front a part composed chiefly of the hæmorrhoidal vessels. Proceeding forward with the layer one may pass outside of it and remove it with the rectum, but at the back this cannot be done, the true plane of cleavage being inside. Hence in abdominoperineal amputation the rectum cannot be removed with its entire sheath. Laterally it is necessary to go within the rectal sheath. Anterior liberation of the rectum should be reserved for the last step. Only operation by the abdominoperineal route gives sufficient assurance of security in the ablation of rectal cancer.

The lowering of the intestine to the perineum gives the patient an anus between the buttocks with conservation of the function of evacuation. The lowering may be very difficult or impossible, but it never requires too much economy in exeresis. The repair of the perineal breach is quite rapid. Pelvic cellulitis need no longer be feared. The lowering of the intestine does not cause great shock. The entire operation is performed without opening the intestine. It is done in two stages, the abdominal and the perineal. The technique is described in detail.

PAGE

Berla E. Surgical Treatment of Carcinoma of the Rectum and Its Late Results (Il trattamento chirurgico del carcinoma rettale e i suoi risultati lontani) *Clin chir* 1930 vi, 1

The author reviews thirty-five surgically treated cases of carcinoma of the rectum. In the majority of the cases the operation was performed by the perineal route according to the Quenu-Baudet technique and under spinal anesthesia induced with novocain. There were no postoperative complications due to pelvic cellulitis or necrosis of the stumps of the intestine. There were four deaths from the operation. Two of these deaths occurred in cases in which oper-

ation was performed by the combined abdominoperineal route. The total mortality was 11.4 per cent and the mortality of the simple perineal operation, 5.7 per cent. In recent years the mortality of the perineal operation has been reduced to zero.

Two patients were still living after six years, three, after four years, one after three years, three after two years, and four after less than a year. Of the thirty-one cases operated on by the perineal route a recurrence developed in 58 per cent, but the operation resulted in very marked improvement in the general and local condition for a time.

The author discusses the comparative value of the combined abdominoperineal and the simple perineal method of operation and concludes that while, theoretically, the former should be more thorough and therefore preferable, the perineal operation is the better procedure in the majority of cases as its mortality is lower. The preservation of the sphincter in the combined method is a theoretical rather than a real advantage as stenosis often occurs. The more radical combined method should be used only in cases in which the diagnosis has been made early and the general condition is good. As the tendency today is toward earlier diagnosis the mortality of the combined operation will probably decrease.

ATREY G. MORGAN, M.D.

Rowntree G. Discussion on the Complications of Operations for Piles. *Proc Roy Soc Med Lond*, 1930 xxvii, 702

The author calls attention to the various complications that may follow hæmorrhoidectomy and suggests how these complications may be avoided. Structures following hæmorrhoidectomy are the result of fibrosis and contraction of granulation tissue in the submucosa which has been caused by trauma or infection. The author favors the ligature operation in which the whole hæmorrhoid is ligated en masse without transection and without any cutting besides the V-shaped incision of the perianal skin.

ROBERT ZOLLINGER, M.D.

## LIVER, GALL BLADDER, PANCREAS AND SPLEEN

Bernhard F. The Surgical Significance of White Bile According to Twenty-Five Clinical Observations at Operation and the Results of Successful Attempts to Produce Hydrops of the Biliary Tract in Experiments on Animals (Die Bedeutung der weissen Galle fuer die Chirurgie nach 25 klinischen Beobachtungen bei Operationen und auf Grund von erfolgreicher Versuchen den Hydrops der Gallenwege im Tierversuch zu erzeugen) *Deutsche Zeitschr f Chir* 1930 ccxvii, 66

White bile was encountered in 25 of 5613 cases at operations on the biliary tract performed at the Poppert Clinic. The hydrops of the biliary tract was produced by stone in the common duct in 16 cases, by an inflamed, stone-filled gall bladder in 1 case, and by displacement or compression of the common duct

by a tumor or chronic pancreatitis in 8 cases. Accordingly, white bile occurs more frequently in cholelithiasis than in biliary obstruction from tumors. Jaundice, which precedes the development of hydrops of the bile tract, is generally less intense and of shorter duration in stone obstruction than in obstruction caused by tumor. Jaundice may be absent when white bile is formed after gall stone obstruction. White bile appears sooner in cholelithiasis because in this condition there is apparently a hypersecretion of the mucosa of the biliary tract with increased resorption of bile.

The author rejects the theory that white bile is pancreatic secretion which has entered the biliary tract.

In the rabbit, hydrops of the biliary tract may be produced by ligating the common duct and administering glucose infusions daily. Examination of the white bile obtained in such an experiment showed that it was not produced by bacterial infection. The hydrops of the biliary tract in the rabbit was free from bacteria, all constituents of bile except mucus were absent and the diastase content was very low. The pressure within the biliary system was found to be less than the secretory pressure of the liver. The results of the experiments on animals indicate that in hydrops of the biliary tract there is a paracholia and not an acholia. The author believes that the inflammatory manifestations which appear in the perportal tissues in biliary obstruction may be a factor in the formation of white bile.

Of 844 choledochotomies, white bile was found in 18 (2.1 per cent), and of 121 entero anastomoses, it was found in 7 (5.7 per cent). Dilatation of the biliary tract is in general slighter in cases of white bile associated with stone formation than in cases of obstruction of the common duct by a tumor.

The mortality of choledochotomy averaged 9.37 per cent, but in the cases with white bile it was 22.2 per cent. In cases in which an entero anastomosis was done the mortality averaged 10 per cent, but in cases of hydrops of the bile tract it was 43 per cent. Therefore in the presence of white bile the prognosis must be considered more grave. The chief danger is cholemic bleeding which must be combated by prophylactic measures. COLMERS (Z)

Bargen, J. A., and Rankin, F. W. Tests of Hepatic Function in Carcinoma, Their Value in Cases of Neoplasm of the Colon With and Without Metastasis to the Liver. *Ann Surg*, 1930, **xc**, 225.

In about 50 per cent of patients with extensive hepatic metastasis proved surgically, metastasis was suspected from the findings of the general examination. Notes such as the following appeared frequently in the clinician's resumé of the results of examination: "epigastric fullness with mass", "liver large and irregular", "mass in the upper abdomen, liver edge tender and irregular", "liver nodular and lower edge three fingers below costal margin". Furthermore, retention of dye in these cases was usually marked. In other cases in which there was a high

retention of dye and numerous metastases were found in the liver at operation the liver was not palpable even on deep inspiration.

It seems evident, therefore, that in some cases the test of hepatic function may add valuable information to confirm a clinical suspicion of hepatic metastases and in others may suggest their presence and lead to the use of all possible clinical diagnostic measures to establish their presence or absence.

Bargen and Rankin do not anticipate withholding surgical intervention in many cases as the result of this study, but they emphasize that when the lesion is large, especially when it can be seen by means of the proctoscope when its operability is questionable, when metastasis to the liver has evidently taken place, and when there is no obstruction, the patient may be spared an exploration. They hope that this investigation will stimulate earlier recognition of malignant lesions of the large intestine so that a greater number of cases may come to the surgeon at a time when the lesion is resectable.

Robinson, R. H. O. B. The Role of Short Circuit Operations in the Treatment of Cholecystitis. *Lancet*, 1930, **ccviii**, 673.

The author has come to the conclusion from his own results that in cases of bile duct stricture, cholangitis, and induration of the head of the pancreas in which the cystic duct is patent and the gall bladder is comparatively little changed except for the presence of calculi, cholecystogastrostomy or cholecystoduodenostomy should prove to be the operation of choice. Although some authorities have invariably noted evidence of infection after they have performed these operations on animals, Robinson has performed them both in clinical cases and on animals without producing infection. However, because of the conflict of opinion regarding the risk and degree of ascending infection, he believes that further evidence is necessary before they can be regarded as alternatives to cholecystectomy in the type of case under discussion.

JACOB M. MORA, M.D.

Walton, A. J. Some Modern Aspects of Cholecystitis and Cholelithiasis. *Lancet*, 1930, **ccviii**, 334.

The majority of biliary calculi are formed largely of cholesterol. This substance, which is normally present in the blood and bile, is apparently present in larger quantities in women than in men and is greatly increased in the blood and bile during pregnancy and certain diseases. It appears to be found only in stones that are formed in the gall bladder. Calculi formed of pure pigment and calcium are much less common than cholesterol stones and appear to be generally formed in the ducts. Calculi found in very early life are of the pure calcium pigment variety and are formed in the intrahepatic ducts. They are formed independently of inflammatory change. Pure calcium pigment stones are found also in a large percentage of cases of acholic jaundice. In such



cases they may be deposited in the gall bladder or the bile ducts and if removed from the gall bladder will almost certainly recur in the ducts unless the spleen is removed. Hence this variety may be formed as a result of a metabolic disturbance. Other varieties of calculi develop as a result of chronic inflammatory changes.

In a large number of cases of gall stones the clinical history dates back to an infection such as typhoid fever, influenza, or pneumonia.

Cases are occasionally seen in which stones are present in the wall of the gall bladder, but it is probable that these are developed not in the submucosa but in small hernial protrusions of the mucosa which have been shut off.

Infection may reach the gall bladder by way of the common and cystic ducts, the portal vein and the liver, the blood stream, or the lymphatics, or by direct extension from some other organ such as the appendix. It is generally believed that ascending infection of the gall bladder is rare. This theory is supported by the fact that organisms are more common in the wall of the gall bladder than in the lumen. According to the most generally accepted theory, infection of the gall bladder occurs as a rule from systemic infection or by direct or lymphatic spread from the liver or the appendix. The author refers to the work of Graham who pointed out that in most cases of cholecystitis there is an adjacent hepatitis which suggests that the primary infection might have been in the liver and had spread thence by direct or lymphatic channels to the gall bladder. However it could be argued as logically that the infection began in the wall of the gall bladder and spread thence to the liver. Rosenow has shown that cholecystitis can be produced by the injection of specific organisms into the blood stream and Mann observed that acute cholecystitis rapidly follows the injection of Dakin's solution into the blood stream. Evidence that cholecystitis is only a part of or the late result of a mild general septicæmia appears to be very strong. Years ago it appeared that such infections were due most commonly to the colon bacillus or typhoid bacillus but today they seem to be the late results of chronic streptococcal infection.

Early changes in the gall bladder will respond well to medical treatment. Whether the lipid deposits causing a typical strawberry gall bladder will also respond to medical treatment is less certain. The author believes that operative treatment should be considered in the early stages only if adequate relief is not obtained by medical measures. If the symptoms of general infection do not abate if they recur frequently or if there is marked tenderness over the gall bladder operation should be undertaken. When stones are diagnosed by any of the various methods of examination operative treatment will be required sooner or later.

The abdomen should be closed with a drain to the cystic duct regardless of the operative technique employed and firm ligation of the cystic duct.

ANTHONY F. SAVA, M.D.

Gosset A, Duval P, Bertrand I, and Moutier F  
Intramural Gall Stones (Les calculs vésiculaires intramurales). *Presse méd. Par.*, 1930, xxviii 161

Intramural gall stones often do not cause very decided symptoms. If operation is performed for cholecystitis or some concomitant disease, the gall bladder may seem to be perfectly normal on palpation but later the intramural calculi are set free in the lumen and the picture of cholelithiasis develops. At operation, the gall bladder is found practically normal in size. It cannot be said that a percholecystitis is present, but the adventitia shows slight thickening and is whitish and shining like mother of pearl, and palpation may disclose hard nodules which seem to be fixed in the wall. Sometimes a large number of these calculi are present but in many cases there are only a few and nothing can be felt on palpation.

Histological examination shows that intramural calculi always lie in Luschka's ducts. There is a good deal of discussion with regard to the morphological and functional significance of these ducts. According to one theory they are accessory glands according to another, simple diverticula in the gall bladder epithelium and according to a third abortive branches of the bile ducts.

The authors think it important for surgeons to know the characteristics of the intramural calculi in order that on laparotomy they may not mistake a pathological gall bladder for a normal one when no calculi are found within it. The only treatment for intramural calculi is cholecystectomy.

The article is illustrated by colored photomicrographs.  
ALBERT G. MORGAN, M.D.

Walters W, and Marshall, J. M. The Reflux of Pancreatic and Duodenal Secretions through a Drainage Tube in the Common Bile Duct  
*Surg. Gynec. & Obst.*, 1930, l 627

Higgins and Mann working on healthy guinea pigs saw portions of test meals injected into the duodenum pass directly into the common bile duct. McArthur reported a case in which reflux of barium from the duodenum coated a stone in the common bile duct. It is certain however that in most cases of obstruction of the common bile duct such phenomena do not occur. Codman suggested that pressure of the root of the mesentery on the transverse portion of the duodenum causing back pressure may have been an etiological factor in a case observed by him. Abdominal distention with partial or complete ileus might be a contributing factor, especially when it occurs in the presence of dilatation of the atonic duct and sphincter of Oddi. In all of the cases dilatation of the common bile duct was marked and a sphincter was present through which a large scoop could be readily passed into the duodenum. Undoubtedly, dilatation tends to facilitate reflux but the presence of an additional factor seems necessary because of the many cases of dilated ducts in which reflux does not take place. It is possible that in cases in which the pancreatic duct

empties into the common bile duct well up in the ampulla a spasm below the opening or a stone impacted in the tip of the ampulla causes reflux of pancreatic secretion up the common bile duct and out of the drainage tube

The abnormal physiological changes in these cases are essentially the same as those in cases of external duodenal fistula. Walters and Bollman emphasized the importance of the loss of fluids and chlorides. They found that complete loss of pancreatic fluid is incompatible with life for more than a short period.

The early diagnosis of the complication is important. Drainage of more than 1,000 c cm. of bile in twenty-four hours should arouse suspicion when it persists. If pancreatic and duodenal secretions are present, the drainage material is thin and often flocculent, and has a sour, rancid odor. If it comes into contact with the skin or tissues in the wound, there is hyperemia and later digestion of tissue. Methylene blue given by mouth appears in considerable amounts in the drainage material a few minutes after its ingestion. Finally, laboratory examination of the fluid will reveal the presence of digestive enzymes.

The treatment of such cases should be directed toward prevention of the loss of these secretions and correction of the effect of the loss. It is essentially the same as that for external duodenal fistula. An effort should be made to re-establish the flow in the normal direction. Fluids should be given in abundance orally, subcutaneously, and intravenously to keep the chemistry of the blood within the normal limits and to restore fluid and chemical loss. If the condition does not become promptly corrected under conservative and supportive treatment, jejunostomy may be done. The draining fluid can then be injected into the jejunum with a syringe or by directly connecting the drainage tube of the common bile duct with the jejunostomy tube. Einhorn successfully treated duodenal fistula by passing a tube by mouth into the proximal portion of the jejunum and feeding through the tube.

Higgins, G. M., and Wilhelmj, G. M. Pancreatic Bladder in the Domestic Cat. Report of a Case. *Arch Surg*, 1930, **xx**, 305.

During an investigation of the effect of intravenously injected emulsified fat on the emptying of the gall bladder of the cat, the authors encountered a case of pancreatic bladder. Although twenty-three cases of well-defined pancreatic bladders have been recorded in the literature during the last twenty-three years the anomaly is exceedingly rare. It appears only in the domestic cat.

The various cases described in which the aberrant pancreatic ducts or bladders were confluent with biliary structures must be interpreted as the result of secondary communications between the two, and not on the basis of the dual concept of the hepatic diverticulum. The histological distinctions between the pancreatic structures on the one hand and the

biliary structures on the other which have been described previously and were confirmed in this study militate against a common origin for pancreatic and biliary vesicles.

Elman, R., and Hartmann, A. F. The Cause of Death Following Rapidly the Total Loss of Pancreatic Juice. *Arch Surg*, 1930, **xv**, 333.

Recent studies on dogs which died following total loss of sterile pancreatic juice revealed that the cause of death was dehydration with resulting circulatory changes. If vomiting was prevented, the blood shortly before death showed extreme concentration with a marked reduction in the bicarbonate and hydrogen ion concentration, i.e., an uncompensated acidosis. When severe vomiting occurred, the acidosis was less marked or was even replaced by an alkalosis due to the superimposed loss of gastric juice.

Recovery and prolongation of life during drainage of pancreatic juice may be obtained by the administration of Ringer's solution. The pancreas apparently secretes a juice with a composition which is more or less constant even when its constituents in the blood are reduced to a very low level.

These observations emphasize the importance of the pancreatic juice in conditions causing loss of gastro-intestinal secretions such as prolonged bilious vomiting, intestinal fistulae, obstruction below the pancreatic duct, and protracted diarrhoea. In many clinical cases of such conditions the simple chemical solution containing sodium lactate has been used with striking results.

GEORGE A. COLLETT, M.D.

Desjardes, R. Ruptures of the Spleen, Particularly Those Associated with Rupture of the Left Kidney (Contribution à l'étude des ruptures de la rate et en particulier des ruptures associées de la rate et du rein gauche). *Lyon chir*, 1930, **xvii**, 17.

Desjardes reports three cases of abdominal contusion. The first was that of a girl seven years of age who fell from the second story. The fall was followed by signs of internal hemorrhage and hæmatoma. The spleen had been ruptured and the left kidney had burst. Splenectomy and nephrectomy were followed by recovery. The spleen showed no signs of an earlier lesion. About six weeks after the operation the findings of a blood examination were as follows: red cells, 4,030,000; white cells, 20,000; hæmoglobin, 75 per cent; polymorphonuclear neutrophils, 71 per cent; eosinophiles, 1 per cent; lymphocytes, 7 per cent; medium sized mononuclears, 15 per cent; and large mononuclears and transitional, 6 per cent.

The second case was that of a boy aged eighteen years who fell from a wagon, landing flat on his abdomen. The injury caused severe pain, but no loss of consciousness. It was followed by signs of a peritoneal reaction. At operation, the spleen was found to be enormous and the site of a hæmatoma in the process of fissuring. There were three fissures from



twenty-first injection of air was done with difficulty and resulted in the formation of a small pocket which extended laterally and particularly over the precardiac region. The manometer registered -15, and when 120 c cm of air had been injected, registered 0. Then suddenly, when the site of injection was changed, a large pocket was found which admitted from 200 to 300 c cm of air while the manometer registered about 0. At this time the air pocket was no longer precardiac, but subdiaphragmatic. After the twenty-seventh injection of air, positive readings were obtained. On fluoroscopic and roentgenographic examination a subdiaphragmatic and subhepatic bubble of gas was demonstrated. Soon thereafter there was a recurrence of the vomiting, nausea, and pain in the right side, associated with negative readings of the manometer. Replacement of the air with oxygen was followed by improvement in all of the abdominal symptoms. The pneumoperitoneum persisted for two months, at the end of which time the patient was lost to the author's observation.

It was of interest that in the induction of the artificial pneumothorax some of the air entered the peritoneum and remained localized above the liver. This localization in the peritoneal cavity was probably due to an old, walled off tuberculous peritonitis. As to the mode of origin of the pneumoperitoneum two explanations are suggested. According to one, the needle pierced the diaphragm during its respiratory excursions. It is improbable, however, that this accident could have happened at each injection of the

air. According to the other explanation, which is more logical, the air passed from the thorax to the peritoneal cavity by way of the orifices of the oesophagus and the aorta. If this is the correct explanation the condition should be designated a "spontaneous pneumoperitoneum." Such an accident is not a contra indication to further pneumothorax therapy. The abdominal symptoms are readily relieved by replacing the air with oxygen.

JACOB E. KLEIN, M D

Overholt, R H Phrenic Nerve Stimulation in Diaphragmatic Hernia *Ann Surg*, 1930, xci, 381

The differential diagnosis between diaphragmatic hernia and eventration has been based on movements of the costal margins, roentgenoscopic signs, studies of intragastric pressure, pneumoperitoneum, the findings of laparotomy, and the results of faradization of the phrenic nerve.

When the phrenic nerve on the side of a diaphragmatic hernia is stimulated a response of the diaphragm is seen under the fluoroscope. In eventration, faradization of the nerve fails to cause contraction.

The author reports a case of hernia of the diaphragm, with roentgenograms and diagrams showing the findings and the result of operation. The radical operation for repair of the hernia was simplified by preliminary phrenic nerve paralysis and spinal anesthesia.

CARL R. STEINKE, M D

# GYNECOLOGY

## UTERUS

**Young J** Chronic Infection of the Cervix *Brit Med J* 1930 i 577

The author calls attention to three important advances which have been made in gynecology in the past few years (1) the establishment of palliative as opposed to operative treatment of active salpingitis, (2) recognition of the frequency of strain of the spinal joints in gynecological cases and (3) recognition of the morbidity caused by chronic cervical infection.

On the basis of seventy four cases he describes the clinical features of chronic cervicitis and gives an explanation for some of the symptoms. He states that with the possible exception of vaginal prolapse chronic infection of the cervix is the most common gynecological cause of pain in the lower abdomen and pelvis.

As treatment of chronic cervicitis he recommends dilatation of the cervix and about six linear cauterizations the entire length of the cervical canal. He does not advocate curettage. He states that from 50 to 60 per cent of cases treated by cauterization are cured.

In discussing the treatment of pain persisting after apparent cure of the site of the disease, Young states that Cotte has reported marked relief of intractable pelvic and abdominal pain from division of the main trunks of the pelvic sympathetic in front of the fifth lumbar vertebra. W O JOHNSON MD

**Sellheim R** Simplification of the Operation for Myoma Which Establishes Early Operative Indications (Erläuterung der Myomoperation und die dadurch bedingte Indikationsverschiebung nach der Ruheroperation hin) *Muenchen med Wochenschr* 1929 R 1495

For vaginal operations especially those for submucous myomatata Sellheim recommends the transverse segmentation of Faur which he saw done in Budapest by Toth. In this procedure the vaginal mucosa is incised in a circular fashion above the external os and pushed upward the uterine vessels and the contiguous parts of the ligaments being then ligated. This having been done the division is continued anteriorly and posteriorly until the uterine cavity or at least the region of the lower pole of the myoma is reached. The cervical walls are then incised laterally on both sides the flaps so formed are retracted, and the newly formed uterine os is grasped with double toothed tenacula. The opening in the uterus is therefore a window into the uterus placed at a higher level. In the enucleation of the myoma care is taken not to pull or press upon the ligated uterine vessels or ligaments as this may cause renewed hemorrhage.

For the abdominal operation Sellheim recommends what he calls a 'prophylactic abdominal wall plastic.' He has abandoned the Pfannenstiel transverse incision for the longitudinal incision. In making the incision and especially in closing it he frees the borders of the recti from their fascial coverings. In closing it he sutures the muscles from below upward until the unopened fascial sheaths are reached. Especially for cases in which the abdominal wall is fat he recommends extension of the incision to the anterior vulval border as is done by Kulenkampf and lateral nicking of the recti. By these procedures the pelvic organs are exposed quickly and the approach to the operative field is flattened. To be sure that the incision will be exactly in the midline Sellheim scratches its site on the iodized skin with the point of a needle before the patient is draped a procedure suggested by Freyssi. For closure he does not use skin clips as he prefers a continuous over and over fine catgut suture, which he believes acts as a drain for the subcutaneous wound secretion. Most of the catgut is absorbed and what remains is removed on the day of the patient's discharge from the hospital.

In the abdominal operation for myoma, Sellheim does an enucleation as this affords a better approach to the round and infundibulopelvic ligaments which especially in cases of intraligamentous fibroids, are pushed far laterally. Moreover, when the myoma is situated chiefly within a ligament, enucleation prevents injury to the ureter. H FURN (G)

**Cooke W R** Transition to Malignancy in Benign Lesions of the Uterine Mucosa *Am J Obst & Gynec* 1930 LX 210

Transition to malignancy is sufficiently frequent in and about ectopic glandular epithelium and in accessible adenomatoid growths as usually to demand biopsy and radical destructive treatment of such tissue with the cautery. However, in cases of erosion or ectropion in patients under twenty five years of age biopsy is not imperative unless the lesion bleeds freely on slight trauma or fails to heal promptly after adequate cauterization and after treatment. Whenever there is the slightest doubt as to the gross diagnosis biopsy should be done as a preliminary to the treatment of any co-existent lesions and especially before plastic work about the cervix is undertaken.

All adenomatoid lesions of the cervix and endometrium demand careful histological study. If the clinical picture is sufficiently suggestive, the condition should be treated as if it were definitely malignant.

All easily bleeding lesions and all single large or deep erosions should be subjected to biopsy. Care

should be taken to secure a piece of tissue which includes the entire lesion and its edges.

Promptness and thoroughness in the study and treatment of all cases of cervical and endometrial disease (especially if metrorrhagia is a feature) will result in a definite decrease in the incidence of cancer of the uterus

E. L. CORNELL, M.D.

Bailey, K. V. An Inquiry Into the Basic Cause and Nature of Cervical Cancer. The Pathology of Cervicitis (Erosion of the Cervix) and the Relation Between Cervicitis and Cervical Cancer. *Surg., Gynec. & Obst.*, 1930, 1, 513

Eight hundred and fifty specimens of the cervix uteri were studied by the author to determine the pathological characteristics of so called cervical "erosion" and its relationship to the beginning of cervical carcinoma.

Bailey states that although congenital erosion (the reddened patch around the external os in the nulliparous and presumably noninfected cervix) has long been attributed to an anomalous growth of the mucous membrane lining the cervical canal whereby it fails to recede during infancy from its encroachment on the portio, he has demonstrated definite inflammatory reactions around these areas.

The various phases which inflammatory erosions present in relation to cancer are described in detail. Irritation causes a temporary loss of surface epithelium with replacement of the firm muscle tissues by liquid inflammatory material. A true erosion (acute cervicitis) occurs, but this soon passes over into the second stage of epithelial reaction to inflammatory irritation with proliferation and repair, during which the evidences of inflammatory reaction are lessened, the exudate is diminished, the epithelium lining the cervical canal proliferates in an effort to repair, and new glandular elements are formed. The downgrowths vary in depth, and between them the sparse connective tissues of the inflamed cervical surface persist in varying amount. The general appearance is one of great epithelial activity, to which the term "papillary erosion" has been applied. The next stage is that of replacement of columnar by squamous epithelium on the surface of the affected area and the beginning of final repair. Irregular, relatively thin strips of new squamous epithelium encroach on the area covered by columnar epithelium and rarefaction of the denser subepithelial tissues occurs with almost complete disappearance of the inflammatory reaction and relatively deep penetration of glandular downgrowth. The final stage, that of ultimate healing, shows completion of the new epithelial covering over the surface tissues. In some cases, even and quick subsidence of the primary infection is evidenced by the formation of a uniform and relatively thin layer of squamous epithelium covering the old area of erosion which then appears as a mass of scattered glandular structures in varying degrees of dilatation and situated at varying depths below the surface.

Ulcerative erosion is entirely distinct pathologically from proliferative erosion. It occurs most commonly in the hypertrophic lacerated cicatricial cervix of the multipara. The affected area becomes definitely depressed below the level of the surrounding epithelium of the portio. It is irregular in outline, granular, and coated with chronic exudative material. Histologically, it is entirely denuded of epithelium and its surface is covered with granulating tissue with an underlying hemorrhagic zone in contact with deeper lying masses of lymphocytes, leucocytes, and macerated cells. Epithelial tissue and glandular elements are prevented from encroaching upon it by the virulence of the causative agent. The process is characterized by chronicity with failure of the healing process. In ulcerated erosion the primary destructive agent is of greater virulence than that causing proliferative erosion and the tissue loss persists. The epithelium in the vicinity reacts to the irritation but is unable to cope with the prolonged attack.

The author suggests that the term "perioricular cervicitis" be applied to proliferative erosion, the term "ulcerative cervicitis" to ulcerative erosion, and the term "glandular cervicitis" to infection limited to the cervical glands.

ALICE F. MAXWELL, M.D.

Béclère, A. Sarcoma of the Uterus and Roentgen Therapy (Sarcome de l'utérus et roentgentherapie). *Gynec. et obst.*, 1930, xxi, 2

Béclère reports a case of uterine sarcoma extending 20 cm. above the pubes which showed a remarkable response to X ray therapy. The tumor completely disappeared after five irradiations, regressing at the rate of 1 cm. a day and thereby exceeding the usual maximum rate of regression which is 1 cm. a week. The patient then remained apparently well for several months, but succumbed ten months later from a vertebral metastasis.

While X ray therapy does not result in a cure in all cases of uterine sarcoma, it has a lower primary mortality and is followed by a longer period of amelioration than surgical treatment.

The author advises X ray therapy as postoperative prophylaxis against recurrence in early cases and urges its use in all cases which are hopelessly inoperable, cases of recurrence and metastasis, and cases in which surgery is contra indicated or is refused by the patient.

HAROLD C. MACK, M.D.

#### ADNEXAL AND PERIUTERINE CONDITIONS

Holtz, F. Clinical Studies of Non-Tuberculous Salpingo-Oophoritis (Klinische Studien ueber die nicht tuberculose Salpingo Oophoritis). *Acta obst. et gynec. Scand.*, 1930, v, Supp.

The author reviews 1,262 cases of non tuberculous salpingo oophoritis which were treated in the gynecological clinic of the Sabbatsberg Hospital, Stockholm, in the period from 1919 to 1920. Four hundred and two were gonorrhoeal, 102 septic, 10

both gonorrhoeal and septic and 748 of unknown causation

In only 4 (1.4 per cent) of the 290 cases in which the adnexa were removed did it appear that the condition was a sequela of appendicitis. In 195 (15.5 per cent) it followed abortion or parturition. In cases of gonorrhoea the onset occurred just as often early as late in the puerperium. In 63.4 per cent of the cases the onset of the disease was related to menstruation. The first attack generally occurred at the end of or immediately after menstruation whereas recurrences developed usually immediately before or at the beginning of menstruation.

Most of the patients had been taken ill between the ages of twenty and twenty five years. Those with gonorrhoeal salpingitis were on the whole younger and included a greater number of unmarried women than the others.

In no less than 95.5 per cent of the cases treated for recurrence the recurrence developed within the course of four years. In most of the cases in which the interval between attacks was more than four years re-infection could be demonstrated.

In 91 per cent of the cases the onset was acute. In septic salpingitis, impairment of the general condition occurred at an early acute stage in 34.3 per cent of the cases, peritoneal irritation in 53.3 per cent and a temperature of 39 degrees C or more in 72.0 per cent. In gonorrhoeal salpingitis the incidence of these signs in the early acute stage was respectively 2.3, 26.8 and 22 per cent.

The pulse rate was no higher in gonorrhoeal salpingitis than in septic salpingitis, providing septicaemia was absent. In the presence of septicaemia it was much more rapid as well as small and irregular.

The course of the illness was generally of a benign character. In only 26 cases (2.1 per cent) was life threatened. The condition most frequently threatening life was diffuse peritonitis which occurred in 16 cases. In 23 of the 26 cases in which there was danger to life the salpingitis was probably or certainly of septic origin.

Abscess of the pouch of Douglas occurred in 41.2 per cent of the cases of septic salpingitis but in only 2.1 per cent of those of gonorrhoeal salpingitis and only 2.8 per cent of those of salpingitis of unknown origin. Perforation to surrounding organs (as a rule to the rectum, but never into the peritoneal cavity) occurred in 15.7 per cent of the cases of septic salpingitis but in only 0.5 per cent of those of gonorrhoeal salpingitis. In some of the cases of perforation to the rectum serious sequelae developed.

Pyrexia persisting for more than two months occurred in 72 (6.3 per cent) of 1,149 cases. It was most frequent in the cases of septic salpingitis in which its incidence was 15.7 per cent. In 14 of 24 cases operated upon an ovarian abscess was found.

In 60.6 per cent of the cases the swellings were bilateral. Unilateral salpingitis with complete absence of swelling and pain on one side was present in about 14 per cent of the cases and was as frequent in septic cases as in gonorrhoeal cases.

Menstrual disturbances occurred in 92 per cent of the cases. In 52.2 per cent, menstruation was delayed. Its duration was normal in 44 per cent, prolonged in 31 per cent, and shortened in 25 per cent.

In several cases the salpingitis became more severe from one to three days before menstruation.

Amenorrhoea was present at the time of the patient's admission to the hospital in only 1.5 per cent of the total number of cases but in those in which the duration of the illness was more than two months its incidence was 11 per cent.

In all of the 9 cases in which there was an associated pregnancy the course of the illness was favorable.

The treatment was at first expectant operation being undertaken only on definite indications. Laparotomy was performed during the stage of pyrexia in 42 cases in which the condition was dangerous or the diagnosis uncertain. There were 8 deaths. In 25 of these cases (3.5 per cent) the adnexa were completely or partly extirpated. Minor operations such as punctures, colpotomy, and the opening of easily accessible abscesses were done in 66 cases (5.6 per cent) with 2 deaths. The remaining 1,082 cases (90.9 per cent) were treated expectantly with 5 deaths due to septicaemia or poor general condition.

The mortality during the febrile stage was 0.25 per cent in the gonorrhoeal cases, 13.3 per cent in the septic cases, 0 per cent in those of unknown cause and 1.3 per cent in the total number of cases.

Under continued expectant treatment in the afebrile stage 92.2 per cent of the patients with a first attack and 63.1 of those with recurrences recovered subjectively. The primary result was better in the acute cases (93.7 per cent of the patients subjectively cured) than in the chronic cases (64.7 per cent of the patients subjectively cured).

After an observation period of at least four years, about 90 per cent of the patients were re-examined. Eighty-one per cent of those treated for a first attack and 69 per cent of the others were found free from recurrence and fully capable of work. A cure was obtained in 81.5 per cent of those who had been acutely ill and 71.4 per cent of those who had had chronic salpingitis.

The frequency of recurrences was in direct ratio to the number of attacks. The treatment of cervical gonorrhoea seemed to decrease the risk of recurrence.

Retroluxion of the uterus with marked symptoms was found in only 1 of 229 cases in which a bimanual examination was made.

In the cases of the patients who were married at the time of re-examination, the frequency of pregnancy was 56.3 per cent in those who had had 1 attack of salpingitis, 29.7 per cent in those who had had 2 attacks, and 0 per cent in those who had had 3 attacks. In the cases of patients who were under twenty-five years of age at the time of their discharge the incidence of pregnancy was 42 per cent in those treated for unilateral salpingitis, 33.8 per cent in those treated for bilateral salpingitis, and

23.1 per cent in those with tilting up of the greater portion of the pelvis

Extra uterine pregnancy had occurred in only 0.5 per cent at the time of re-examination

Two hundred and sixty-five of the patients were operated upon during the afebrile stage (8.1 per cent of those with a first attack and 47.9 per cent of those with a recurrence). Freeing of adhesions was done in 5 cases, unilateral removal of the adnexa in 37, bilateral extirpation of the tubes with preservation of the ovaries in 176, and bilateral complete extirpation of the adnexa in 48.

Only 2 patients (0.8 per cent) died as the result of the operation. The causes of death were cardiac failure and ulcerative colitis. All of those who survived were entirely well at the time they were discharged.

Of those who were subjected to operations which did not prevent pregnancy, 79.5 per cent were free from recurrences and fully able to work at the time of re-examination, and 10 of 20 who were married had become pregnant. Of those subjected to operations in which the function of one ovary was preserved, 88.0 per cent, and of those subjected to bilateral extirpation of the adnexa, 91.2 per cent were well and able to work. Symptoms of ovarian insufficiency had developed in 79.4 per cent of cases in which all ovarian tissue had been removed.

The primary and the late results show that the treatment should be at first expectant, and that operation should be performed only on the basis of definite indications. During the febrile stage operation is indicated only when life is threatened, an easily accessible abscess has formed or the diagnosis is uncertain. During the afebrile stage, it should be done when the condition is chronic and associated with persistent pain and induration, when recurrences develop (except those of a mild and primary nature), and when the diagnosis is uncertain and tuberculosis, extra uterine pregnancy, or a malignant ovarian tumor is suspected. The operation should be as conservative as possible except in the cases of women near the climacteric. When the tubes are removed the uterine cornua should also be excised. The uterus should be left unless it is the site of more serious changes.

Villar, J. Intra-Uterine Injection of Lipiodol, Unrecognized Tubal Perforation, Hysterectomy, Postoperative Roentgenographic Study of the Uterus and Tubes (Lipiodol intra uterum, perforation tubaire méconnue, hystérectomie, vérification radiographique utéro tubaire post opératoire). *Rev franç de gynéc et d'obst*, 1930, **xxv**, 159.

Villar reports a tubal rupture following lipiodol injection in a case of chronic salpingitis. The perforation was without ill effects and was recognized only after hysterectomy, when further injections were made into the isolated specimen to determine the significance of an unexplained shadow seen in the roentgenogram in the region of the right uterine cornu after the first injection. The amount of pres-

sure exerted when the injection was made is unknown as a manometer was not used. The author is of the opinion that controlling the pressure by means of a manometer would not prevent the occurrence of such accidents as the pressure limits of normal tissues and diseased tissues are not the same. He believes that perforations occur more frequently than is suspected and are the direct causes of inflammatory reactions following lipiodol injection. He therefore concludes that the injection of lipiodol is absolutely contra-indicated whenever there is a possibility of latent infection.

HAROLD C. MACK, M.D.

Dahlberg, G., and Akesson, S. A Theory of the Uni-Ovulation Mechanism, and an Experimental Investigation on the Follicular Fluid. *Acta obst et gynec Scand*, 1930, **x**, 63.

Since uni-ovulation cannot possibly be due to time determination of the development of the eggs so that they are liberated of their own accord at intervals of one month, there remains only the possibility that a maturing egg causes the secretion of substances which prevent the other eggs from maturing. The egg being too small to secrete such a substance in sufficient quantities, the authors advance the theory that a maturing egg secretes a hypothetical substance, "ovoin," which stimulates the surrounding cells to secrete an ovulation-inhibiting hormone. This hormone should be present in the follicular fluid.

They believe that they have demonstrated the occurrence of such a substance in the follicular fluid experimentally. When the urine of pregnant women diluted with about an equal quantity of follicular fluid from cows is injected, the Zondek Aschheim pregnancy reaction is negative, whereas when the urine is similarly diluted with blood serum from cows, the reaction becomes positive. Follicular fluid therefore seems to prevent egg maturation.

It is known that corpus luteum gravidarum and corpus luteum menstruationis secrete ovulation-inhibiting substances. The authors assume that the same substance is present in the follicular fluid. They conclude that this ovulation-inhibiting substance is identical with the follicular hormone (a substance already known) since follicular hormone is present in the tissues and at times when an ovulation-inhibiting hormone is presumably present. The ovulation-inhibiting hormone ought to be present in follicular fluid, in corpus luteum menstruationis up to menstruation, and in corpus luteum gravidarum. Follicular hormone is present in these cases. If the embryo secretes ovoin to stimulate the corpus luteum gravidarum, cells in the primary follicles also ought to be stimulated to secrete ovulation-inhibiting hormones. Follicular hormone occurs during pregnancy in primary follicles, but not elsewhere. There is no reason to presume *a priori* that an ovulation-inhibiting hormone is secreted from the placenta. However, as it is shown that follicular hormone is present in the placenta, the placental



tissue ought to have an ovulation inhibiting effect. Earlier investigations carried out by others have shown that the placental tissue has such qualities. This observation supports the authors' hypothesis regarding the occurrence of ovum and the identity of the ovulation inhibiting hormone and the follicular hormone.

It has previously been shown by others that the urine of pregnant women has a stimulating effect on ovulation because of its content of the hormone of the anterior lobe of the pituitary gland. The authors have demonstrated that follicular hormone has an antagonistic effect to the hormone of the anterior lobe of the pituitary gland. As is known the urine also contains follicular hormone. According to the authors' theory follicular hormone is present in the body in a relatively higher concentration than the hormone of the anterior lobe of the pituitary gland but the latter is more easily excreted with the urine than the follicular hormone.

If for some reason follicular hormone is secreted in comparatively large quantities in the body, the result should be inhibition of ovulation and the occurrence of amenorrhoea. The authors assume that the amenorrhoea which sometimes occurs in women with corpus luteum cysts is caused by increased secretion of follicular hormone from the cysts and is always followed by inhibition of ovulation. In certain cases of amenorrhoea with such sterility it should be possible to demonstrate increased follicular hormone secretion by tests of the urine and thus obtain an important clue to diagnosis and treatment. It is of course conceivable that tumors of a different kind cause the secretion of follicular hormone with the same effect. This theory explains why in cows sterility due to ovarian cysts is relatively common and why operations on these cysts have proved successful.

Roughly estimated a mouse unit of follicular hormone ought to counterbalance from three to five mouse units of hormone of the anterior lobe of the pituitary gland. The figures given by Zondek for the concentration of the hormone of the anterior lobe of the pituitary gland in the urine of pregnant women are therefore incorrect. They indicate only effective quantities that is the surplus of hormone of the anterior lobe of the pituitary gland.

Sterility caused by a too strong secretion of follicular hormone or a too weak secretion of hormone of the anterior lobe of the pituitary gland ought to be temporarily corrected by injection of the hormone of the anterior lobe of the pituitary gland.

It has been previously suggested by others that extract of corpus luteum should be of value for the induction of temporary sterility. The authors believe that follicular hormone may be used for the same purpose. This is of practical importance as follicular hormone can be easily prepared from the urine of pregnant women or cows in large quantities, whereas corpus luteum extract must always be rather expensive.

At the present time definite principles for ovarian hormone therapy are lacking. The authors believe that more definite principles may be established on the basis of their theory.

A too low concentration of hormone of the anterior lobe of the pituitary gland should be followed by amenorrhoea or possibly more frequent menstruation than is normal and should be treated with hormone of the anterior lobe of the pituitary gland. Whether the concentration of hormone of the anterior lobe of the pituitary gland is increased in the absence of pregnancy is not definitely known but such an increase is doubtless very rare.

A too low concentration of follicular hormone before the climacteric may be caused by a too low concentration of hormone of the anterior lobe of the pituitary gland. Treatment with this hormone is therefore indicated. A too high concentration of follicular hormone in the absence of pregnancy indicates the presence of corpus luteum formations or of follicular cysts of the ovary. Operation is therefore indicated. If operation is impossible treatment with hormone of the anterior lobe of the pituitary gland is indicated.

Treatment with follicular hormone preparations is not rational if ovulation is desired. In the majority of cases it would be futile to cause menstruation with such treatment because at the same time ovulation is prevented. Treatment with follicular hormone preparations is indicated if the induction of hormonal sterility is desired.

**Einaudi M. Tumors of the Round Ligament**  
(Contributo allo studio dei tumori del legamento rotondo) *Arch Ital di chir*, 1930, xvi, 395

The author reports two cases of tumor of the round ligament—a fibromyoma in a woman twenty-eight years old and a dermoid cyst in a girl eighteen years old. In both cases the neoplasm was in the left inguinal region and could not be reduced by pressure. It had a slight transverse movement even when the muscles of the abdominal wall were contracted. It did not increase in size on coughing or effort or during the menstrual periods. A diagnosis of omentocoele was made, which is the usual diagnosis in such cases.

Dermoid cysts of the round ligament can be easily removed as they are benign tumors and non-infiltrating. As a rule the whole round ligament can be preserved. Operation is necessary because the cysts may become infected and rupture or suppurate and because occasionally they undergo malignant degeneration. **AUDREY G. MORGAN M.D.**

#### MISCELLANEOUS

**Johnstone R. W. The New Physiology of Menstruation and Its Practical Implications in Obstetrics and Gynecology** *Am J Obst & Gynec* 1930 xix 167

The anterior lobe of the pituitary gland secretes two hormones, Rho 1 and Rho 2. The former in

duces the production of oestrin in the ovary, and the latter activates the lutein tissue which is brought into being by Rho 1 and stimulates the beta hormone.

The beta hormone of the lutein tissue governs the preparation of the uterus for nidation and gestation of the fertilized ovum, in other words, it produces the premenstrual changes.

The ovum then produces trophoblasts which in turn form a hormone, and the hormone stimulates the anterior lobe of the pituitary gland to form more Rho 2. Thus the cycle is completed.

Labor sets in when the semic changes in the trophoblasts become such that no further hormone is made and the chain is broken.

If pregnancy does not occur, the initial supply of the beta hormone is soon exhausted and menstruation results.

Johnstone has not found oestrin of much value in clinical cases of amenorrhoea. He has been unable to cause menstruation with it, but after its administration he noted the changes in the vaginal secretions which occur commonly in the lower animals.

Zondek-Asheim tests on 360 specimens of urine are reported by the author. Of the 152 specimens in which they were completed, 57 were negative, 90 were positive, and in 5 the result was erroneous. The incidence of error was therefore 3.3 per cent.

E. L. CORNELL M.D.

Jaschke, R., von. The Treatment of Abdominal Tuberculosis in the Female (Zur Therapie der Unterleibstuberkulose der Frau). *Fortschr. d. Therap.*, 1930, vi, 2.

As representing an advance in the treatment of abdominal tuberculosis in the female, the author cites the abandonment of the chiefly surgical procedures, which were associated with a mortality of from 10 to 12 per cent. These were abandoned because in cases of dry tuberculous peritonitis there were often associated injuries of the small intestine which led to the formation of intestinal fistulae with subsequent malnutrition. Moreover, on account of the extensive adhesions operation was difficult and required a long time. Today operation is performed only in cases in which there is an extensive tuberculous ascites requiring drainage. The reduction of the pressure caused by drainage results in hyperaemia of the peritoneum and an increase in its bactericidal power which favors healing.

For most cases, conservative therapy, including nutrition, mountain climate, and heliotherapy, has been substituted for operation. At first, conservative treatment included systematic tuberculin therapy. About the year 1910, favorable reports on the effect of tuberculin appeared, but thereafter they ceased. Climatic and light therapy, however, represent very definite advances in the treatment. They have a favorable influence upon genital and peritoneal tuberculosis when the patient makes a prolonged stay in a suitable sunny mountain climate such as may be found in Switzerland. The climate of the German moderately high mountain

districts is not so beneficial. However, artificial heliotherapy is of value.

Another advance in the treatment of abdominal tuberculosis is protein stimulation therapy, for which von Jaschke uses caseosan. An effect similar to that of protein stimulation therapy has been obtained with roentgen irradiation up to 25 per cent of the skin unit dose. The irradiation does not destroy the infecting organisms, but even with small doses there is a destruction of lymphocytes and leucocytes, and the albumin bodies released thereby stimulate the surrounding connective tissue to grow so that it is deposited at the site of the diseased tissue. This treatment is considered as entirely non-specific in the sense of proteotherapy. The dosage is still a moot question. Seitz and Wintz consider from 50 to 60 per cent of the skin unit dose as the tuberculosis dose, but a great number of roentgenologists, like the author, give doses between 10 and 30 per cent of the skin unit dose. Recently, von Jaschke has been giving 15 per cent of the skin-unit dose. In mild cases this is administered only once, but in severe cases it is repeated after from one half to one year, 7.5 per cent of the skin unit dose being administered at each of two sittings. Hard rays are selected. Half of the treatment is given on the abdomen and half on the back, with the use of large distant fields and a filter of 1 mm. of copper. In the author's opinion, the general use of X-ray therapy today is the most important advance in treating abdominal tuberculosis.

An inconvenience of the abandonment of operative procedures is uncertainty of the diagnosis. The author believes that for the elimination of uncertainty it is proper in every doubtful case to do an exploratory laparotomy, as the blood picture, diagnostic tuberculin injections, and other tuberculin reactions have been proved unreliable for a definite diagnosis. Moreover, exploratory curettage of the uterus is not advisable in every case and will confirm the diagnosis only when the uterus is diseased with the adnexa. Therefore when von Jaschke experiences diagnostic difficulty he makes certain of the diagnosis by exploratory laparotomy and then gives roentgen irradiation in the manner described. After a few weeks the patient is discharged with instructions as to hygiene and diet, to live out of doors, and, when possible, to lie in the sun. If her economic conditions permit, a sojourn in a Swiss mountain resort is advised. After six months a three weeks' course of heliotherapy is combined with proteotherapy by means of caseosan. A dose of 1 c cm. of caseosan is given every other day intravenously for six days. Then, after an interval of six days, the same dose is given every other day for three doses intramuscularly. In cases complicated by tuberculosis of the uterus the author has repeatedly been able to demonstrate cure of the uterine tuberculosis by exploratory curettage after from one to two years. In two cases conception occurred subsequently and a healthy child was born without injury to the woman. H. FUERN (G)

Taufler, W. Hegar's Accomplishments in the Spirit of Semmelweis. A Contribution to Contemporary History (Hegar's Wirken im Geiste Semmelweis'. Ein Beitrag zur Zeitgeschichte). *Monatsschr f Geburtsh*, 1930, lxxiv, 8

In the period from 1876 to 1878 Taufler was an assistant in the Hegar Clinic at Freiburg. He considers these years among the most happy recollections of his life. At that time Hegar had already accepted and applied the teachings of Semmelweis, when in the other clinics the name of Semmelweis was still scarcely known. From his youthful assistant, Taufler, who came from the Semmelweis Clinic, Hegar learned much of the life and teachings of the great Hungarian. Thus the warmest bonds of friendship soon developed between the teacher and the student. Of interest because of this relationship is the often repeated question as to what prevented the acceptance of Semmelweis' teachings for so long. Even Hegar in his memoir "Ignaz Philipp Semmelweis His Life and His Teachings" did not answer it.

The pathologist Pertik, a friend of Taufler's, gives the explanation that the opponents of Semmelweis were not guided by bad will or personal motives but were unable to free their minds from inherited theories especially since at that time Virchow whose opposition to Semmelweis is well known, was dominating with his mighty intellect the medical thought of that epoch. Hegar applied the teach-

ings of Semmelweis not only to obstetrics but also in a pioneer manner, to the rising young science of operative gynecology, thereby favoring the advance of all abdominal surgery. WILLE (G)

Gérin-Lajolo L. A Method of Transcervical Drainage in Purulent Infections of the Pelvis Requiring Supravaginal Hysterectomy. *Canadian M Ass J* 1930 xxi, 375

In the procedure described by the author the vagina is cleansed duly by aseptic douches for several days before the operation and is painted with tincture of iodine immediately before the operation. After the supracervical hysterectomy, the cervix is dilated the posterior lip is split to its vaginal end, and a T shaped fenestrated drainage tube is pushed through the cervix into the vagina. The drainage tube is held in place by the grip of the cervical stump.

Changing of the vaginal dressings is done when indicated and at the end of forty eight hours douches of saline solution at a temperature of 110 degrees F are given alongside of the tube at a low pressure twice daily. When the tube is removed free drainage is maintained as the tissues do not tend to come together.

This method is of distinct advantage as it permits free drainage from the pelvis and abdomen, prevents adhesions and renders the abscess cavity extra peritoneal. ALICE F. MAXWELL, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Mihayashi, R. Contributions to the Pathology of Placental Tumors (Beiträge zur Pathologie der Plazentartumoren) *Jap J Obst & Gynec*, 1930, xiii, 9

Recently it has become customary to consider a tumor like deposit in the substance of the placenta as a capillary angioma of the chorionic villi, the result of the extraordinary richness of capillaries in the placenta, and reports of fibromata, myxomata, myxofibromata, and sarcomata of the placenta have completely disappeared from the literature. The author describes a tumor which he believes throws light upon the pathological anatomy of the placental anomaly which is under discussion.

The specimen was obtained from a woman who had a normal pregnancy and labor. The child was born at term, and the mother had another labor later. On its fetal surface, the placenta, with a diameter of 17 cm., showed no abnormalities except lateral insertion of the cord and dilatation of the veins. At the site of insertion of the cord the main stem of the umbilical vein was the size of the little finger. On the maternal surface, in about one quadrant, where the cord was not inserted, numerous solid, mostly oval nodules with a papillary structure protruded like grapes. Isolated nodules, varying in size from that of a millet seed to that of a cherry, were connected by thin pedicles or showed an arborescent arrangement. These findings suggested a hydatid mole, but the isolated nodules were completely solid and the basic substance revealed a gelatinous or colloid appearance on section. The involved quadrant of the placenta was completely infiltrated by these structures, whereas the fetal surface showed no such changes. The rest of the maternal surface was covered by decidua. On superficial examination, this portion of the placenta suggested no underlying pathological changes, but on section it was found to consist of masses of nodules which varied in size up to that of a pea and as a result of compression presented a mosaic like arrangement.

The placenta showed general thickening, not a single cotyledon was unaffected. There was no distinct demarcation between the previously described racemose portion and the compact, diffusely thickened portion.

Microscopic examination revealed numerous intact normal chorionic villi between the individual nodules. The thin pedicles joining the nodules showed the same structure as the normal villi. The nodules were covered by a single layered flat epithelium which underwent direct transition into

the syncytial covering of the normal villi. The basic tissue of the individual nodules showed a varying histological structure. In most of the nodules it consisted exclusively of large, often stellate branched cells with large round nuclei resembling those of a so called myxoma. Blood vessels were rare in such nodules. In other nodules the myxoma-like basic substance was hydroscopically swollen and looser, and in some of them the edematous swelling had increased so markedly that a more or less spacious hollow space had been formed. The normal villi lying between such nodules underwent direct transition into them, the tissues of the nodules and those of the normal villi being closely connected with each other. This finding suggested that the normal chorionic villi first became changed into nodules rich in cells and then underwent hydropic degeneration.

In many other nodules such an abundance of blood vessels was observed that at first an angioma was suggested, even though the marked increase of the cellular elements in these nodules could not be overlooked. The vascular nodules showed the same relations to the normal villi as the nodules that consisted exclusively of a cellular basic stroma. As a rule the former prevailed in the part of the placenta showing racemose changes, while the latter were found predominantly in the compact portion. However, this localization was not always distinct, in some places the two types of nodules were interspersed.

All of these nodules were covered by a single layered flat epithelium, but at the sites where they were closely packed together, especially near the chorionic plate, the epithelium was destroyed and the nodules showed the various stages of degeneration of the basic substance. The necrotic nodules were deposited in masses of fibrin between which there were no healthy villi. In such nodules the walls of the blood vessels showed different grades of thickening, some being entirely obliterated and revealing only the circular arrangement of the fibers. Such vascular changes were found only in the portions of the placenta which were necrotic.

The question arises as to whether the placental anomaly described should be considered a true tumor or a hyperplastic tissue proliferation. The author calls it a "chorionoma myxo-angiomatoides disseminatum arborescens." He attributes it, not to the vascular changes, but to a sequela of injury affecting the blood vessels as well as the stroma. He believes that no single cause is responsible for all similar placental tumors as none of the theories so far advanced will satisfactorily explain every case.

LOUIS NEUWELT M.D.

Klein W O Ten Years of Eclampsia and Its Treatment (10 Jahre Eklampsie und ihre Behandlung) *Arch f Gynaek*, 1930 cxxxix 473

The pathogenesis of eclampsia is discussed briefly with special consideration of the most recent contributions of Klabats of the Peham Clinic in Vienna who attempts to explain the condition on the basis of numerous metabolic and chemical investigations and clinical observations. In a discussion of the treatment, the procedures used by Stoeckel and Engelmann are compared.

Klein has collected the material of the last ten years from the Mainz Midwife Institute and has divided it into 'definite' and 'indefinite' cases. The 'definite' cases were those that presented a blood pressure of over 140 mm Hg with or without attacks of convulsions, an albumin content in the urine of more than 3 1000, and one of the other well known symptoms such as edema or headache. These are subdivided into cases with convulsive seizures and cases without convulsive seizures. There is no classification into the eclampsias of pregnancy, labor and the puerperium.

Of 7 263 obstetrical cases treated during the period from 1919 to 1928, definite eclampsia occurred in 126 (1 7 per cent) and indefinite eclampsia in 36 (0 5 per cent). The incidence of eclampsia was therefore 2 2 per cent. Of the 126 cases of definite eclampsia convulsions occurred in 81 (64 3 per cent). The total maternal mortality in the cases of eclampsia was 3 7 per cent and the maternal mortality in cases with convulsions 7 4 per cent. The infant mortality in the entire number of cases of eclampsia was 32 per cent and in the cases with convulsions 30 per cent. In the infant mortality are included all stillbirths, the deaths of premature infants and the artificial interruptions of pregnancy with a definitely non viable fetus. Of the 162 women with eclampsia during labor 95 were delivered spontaneously.

In both groups of cases dietetic treatment was sometimes supplemented by other measures. Vene section was used about twice as often as the Stroganoff treatment. The operation most frequently performed was forceps extraction which was done in 27 cases. Next in frequency was cesarean section which was performed in 16 cases. In the earlier years cesarean section was by no means so harmless a procedure as it has become today as the result of improvement in the technique and better recognition of the indications. The era of rapid delivery by cesarean section is still too recent to show any results in this material. In the cases treated by cesarean section the maternal mortality was 6 2 per cent and the infant mortality 16 4 per cent. In the cases of forceps extraction the maternal mortality was nil and the infant mortality 3 8 per cent.

The author emphasizes the importance of the prevention of the eclamptic attacks. The most important factor is the early recognition of threatening eclampsia which alone affords the opportunity to institute corrective measures in time. Control of the blood pressure is necessary. The chief essentials

in the treatment of threatening eclampsia are (1) absolute rest, (2) strict starvation and thirst treatment for at least three days and (3) stimulation of diuresis with ephyllin in suppository form. The use of oxytocics should be avoided.

For ten years a strictly individualized midline therapy was applied with relatively good results as far as the mother was concerned, but because of the high infant mortality a more active therapy including cesarean section has been used since 1918. The procedure today is as follows:

1 In the presence of definite eclampsia with convulsions delivery by cesarean section or forceps extraction immediately after the patient's admission to the hospital, regardless of whether the child is living or dead.

2 In threatening eclampsia venesection a dry diet stimulation of diuresis and rest.

3 In all preliminary stages a strict diet and close observation. HANBORN (G)

### PUERPERIUM AND ITS COMPLICATIONS

Mashbitz, A M Puerperal Thrombophlebitis (Die puerperale Thrombophlebitis) *Monatsschr f Geburtsh*, 1930 lxxxi, 31

In a material of 49 780 cases representing a period of twenty years and including cases of incomplete abortion with infection the author was able to find 88 cases of thrombophlebitis. Twenty of the latter were of the superficial type and 60 of the deep type. In 1 of the cases of deep thrombophlebitis the axillary vein was involved and in 2 the portal vein and the superior mesenteric vein were affected. The deep thrombophlebitis occurred most frequently between the ages of twenty and thirty years and considerably later after delivery than the superficial type, usually in the second or third week of the puerperium.

The author believes that chemical and mechanical factors are of little importance in the development of thrombophlebitis and that the chief cause is an infectious process. He states that even a low temperature does not exclude a septic origin.

In 2 of the cases of deep thrombophlebitis reviewed fatal pulmonary embolism occurred and in 15 cases metastatic pneumonia and pulmonary infarction developed.

In conclusion the author states that the prophylaxis and treatment of puerperal thrombophlebitis are governed by the infectious origin of the condition. HARTMAN (C)

Sanders J The Mortality from Thrombosis and Embolism and Phlegmasia Alba Dolens Embolism and Sudden Death in the Puerperium in Holland (Die Sterblichkeit an Thrombose und Embolie und Phlegmasia alba dolens Embolie und plötzlicher Tod im Wochenbett in Holland) *Nederl Tydschr f Geneesk* 1929 i 2736

The increase in fatal embolisms in Holland in the last decade led the Government Health Inspector to send a questionnaire to all physicians and midwives

concerning the occurrence of thrombosis, embolism, and sudden death during the puerperium. The author has collected from the official statistics of causes of death all cases of thrombosis and embolism and all cases of phlegmasia alba dolens, embolism, and sudden death in the puerperium occurring in the period from 1911 to 1927. The first group are expressed in number per 1,000,000 inhabitants, and the second in number per 10,000 births. The figures were taken for the entire country and for 5 groups of communities with populations of over 100,000, between 50,000 and 100,000, between 20,000 and 50,000, between 5,000 and 20,000, and fewer than 5,000. In the first group the sexes are listed separately. The figures in the first group have little value because they do not give the number of operations associated with particular danger of thrombosis which have undoubtedly increased. The figures for males and females were parallel. A low point was attained in 1918, but since 1924 there has been a progressive increase. In deliveries, the incidence in the large communities rose from 5.5 per cent in 1911 to 44.1 per cent in 1926 and 36.4 per cent in 1927.

C. E. JANKE (Z)

**Schottmueller. Puerperal Sepsis and Its Treatment in the Light of Bacteriological Research (Die puerperale Sepsis und ihre Behandlung im Lichte der bakteriologischen Forschung.)** *Alin Wchenschr.*, 1930, 1, 23, 75

The term "child-bed fever" is applied by the author only to cases of puerperal fever in which the infection of the genitalia has progressed to a general infection, i.e., to a sepsis. The streptococcus pyogenes haemolyticus is not the only causative agent of puerperal sepsis (Bumm, Zweifel, and others). In his own studies, the author found it responsible in scarcely one third of the fatal cases.

The yearly mortality in Germany from child bed fever is about 3,000 deaths. Any bacterium which causes sepsis may cause puerperal sepsis, even the paratyphus bacillus. In the last few years infection by the haemolytic streptococcus has accounted for only about 2 per cent of febrile abortions. It was present in 18 (2.9 per cent) of 626 abortions occurring in 1926, in 7 (1.35 per cent) of 517 abortions occurring in 1927, in 9 (1.6 per cent) of 563 abortions occurring in 1928, and in 13 (6.05 per cent) of 215 abortions occurring in the first half of 1929. The streptococcus putrificus and staphylococci were causes of fatal puerperal sepsis as frequently as the haemolytic streptococcus.

Among 280 cases of puerperal sepsis there were 180 cases of thrombophlebitis or endophlebitis. The causative organism was the anaerobic streptococcus putrificus in 40 per cent, the streptococcus haemolyticus pyogenes in 20 per cent, and the staphylococcus aureus in 14 per cent. Of 30 cases of lymphangitis, the causative organism was the streptococcus haemolyticus in 88 per cent and Fraenkel's gas bacillus in 12 per cent. Of 32 cases of acute endocarditis, the causative organism was the staphylococcus

aureus in 61 per cent, the streptococcus haemolyticus pyogenes in 23 per cent, the streptococcus putrificus in 8 per cent, and the pneumococcus in 6 per cent. Of 35 cases of mixed infection, the streptococcus haemolyticus was found in 40 per cent, the staphylococcus aureus in 25 per cent, and the streptococcus putrificus in 15 per cent.

True contagious child-bed fever is caused by the streptococcus haemolyticus. The author discusses the manner in which the infection occurs and states that in the case of every woman pathogenic organisms capable of causing a fatal child bed fever may be present in the vagina. In studies of the vaginal bacteria of healthy women the colon bacillus was found in 50 per cent and the gas gangrene bacillus of Fraenkel in 50 per cent, and anaerobic streptococci and staphylococci in the majority. The haemolytic streptococcus was discovered in only a few cases. Women who harbor these bacteria in the vagina (cervical carcinoma) are to be regarded as bacillus carriers. Bumm's pronouncement "The danger arises from without" must today be changed to "The danger arises from within." Doederlein's theory that the vaginal flora of the normal pregnant woman is harmless and belongs to the defensive forces of the organism is rejected by the author, also the theory of Zweifel that a yellow discharge is unconditionally dangerous and prognostically unfavorable. The streptococcus putrificus and the gas bacillus of Fraenkel invade organs only when the organs have suffered injury from trauma or surgery.

The author then discusses the nature of sepsis or generalized infection. He states that multiplication of bacteria in the circulating blood never occurs in the human being, but there is both clinical and anatomical evidence of a septic focus from which frequently repeated or even continuous invasion of the blood stream occurs. The clinical manifestation of the bacterial invasion, i.e., the chill (destruction of the bacteria in the blood with liberation of the endotoxins) follows the invasion after from three to five hours. The best time to make cultures for demonstration of the bacteria in the blood is from three to five hours before the chill. The clinical picture and the outcome of every case of sepsis are determined by the localization of the septic focus and the type of the infecting bacteria.

The author advises careful bimanual palpation of the uterus, parametria, and adnexa of every puerperal woman as soon as fever develops. The septic focus may be (1) the endometrium of the infected gravida or incompletely emptied uterus (practically harmless), (2) lymphangitis in the parametrium (mortality 50 per cent), (3) endophlebitis or thrombophlebitis of the veins of the parametrium (mortality from 90 to 95 per cent), or (4) endocarditis (mortality 100 per cent).

The treatment of puerperal sepsis is discussed in detail. *Therapia sterilisans magna* (collargol, disparen, argocbrom, rivanol, yatren) is without effect. In puerperal fever caused by the haemolytic streptococcus, scarlet fever serum is beneficial. This

should be administered as early as possible in a dose of from 50 to 100 ccm. Antipyretics have never given any results besides their analgesic effect. Specific and non specific vaccines are useless, like wise protein therapy (caseosan aolan etc.) The excessive use of alcohol is inadvisable. Intravenous and subcutaneous infusions and rectal instillations of dextrose are indispensable. Intravenous injections of atrophanthin intravenous continuous drop infusions of adrenalin continued for days and massive blood transfusions are recommended. After abscess formation in the broad ligaments operative procedures come into consideration. When phlebitis is present the infected vein may be ligated beyond the involved segment. Ligation of the inferior vena cava has usually given the author poor results. He therefore gave up this procedure years ago. In 10 per cent of the cases spontaneous recovery occurs. Extirpation of the uterus is practically never indicated. Only in the presence of gas gangrene or tetanus has it given good results, and even under such circumstances it has been successful in only a few cases. The opening of more or less concealed metastatic abscesses (abscess in the pouch of Douglas and abscess of the lung) is often life saving. In the treatment of infected abortions the author employs neither Hegar dilators nor laminaria tents. He awaits the spontaneous opening of the cervical canal or perhaps administers quinine. Since 1914 he has given up manual cleaning out of the uterus and has employed curettage exclusively. He does not douche out the uterus and vagina. He uses the curette not only up to the third or fourth month, but also in the latter months to remove placental remnants and membranes. He regards the removal of retained placental fragments with the curette even following normal delivery—after the uterus has begun to contract—as the most conservative and safe method. He states that in every case the blood clots should be removed from the uterus and vagina by the Crede maneuver from one to two hours after the expulsion of the placenta.

ELIAS DIKES (G)

### NEWBORN

Tyson R M. A Clinical and Autopsy Study of 165 Newborn Infants. *Pennsylvania M J* 1930 xviii 298

Konzelmann F W. Postmortem Pathology of the Newborn. *Pennsylvania M J* 1930 xxxv 301

In the cases of 86 of the 165 newborn infants studied by Tyson prematurity was a factor in the child's death. In some of them it was the only factor that could be ascertained. Syphilis was responsible for the deaths of 10 premature infants and 13 full term children and bronchopneumonia for those of 9 premature infants and 11 full term infants. Toxemia was a factor responsible for the death of 20 infants. Intracranial hemorrhage was found in 26 premature infants and 23 full term infants. Fourteen infants were malformed. In 14 cases there was defi-

nite histological evidence that the cause of death was asphyxia. Acute nephritis was found in 3 cases, status lymphaticus in 1 case, fracture of a cervical vertebra in 1 case, and rupture of the liver in 3 cases. Hemorrhagic disease of the newborn was the cause of 2 deaths and hemorrhage from an unligated umbilical vein following operation for a large hernia was responsible for 1 death. Four deaths were due to general infection. In 10 cases an important factor in the fatality was excessive pressure at the time of birth. In 1 case placental infarction was responsible for the death. Congenital heart disease was found in 1 case. In 7 infants no cause for death could be determined.

KONZELMANN describes in detail his method of performing autopsies on infants and some of the pathological changes he has found in the thymus, heart, lungs, spleen, adrenals, kidneys, and liver. He discusses especially the effects of the toxemia of pregnancy and syphilis on the newborn.

ABRAHAM I. BRALER M D

Partridge J. Stillbirth Due to Intracranial Injury. *J Obst & Gynec Brit Emp* 1930 xxvii 1

The author states that nearly half of the deaths of infants who are alive at the beginning of labor and are born dead to healthy mothers are due to intracranial injury sustained at the time of birth and that the incidence of temporary or permanent intracranial injury in infants born alive is probably high. This destruction or injury is to be regarded as a phenomenon of nature rather than an essentially obstetrical difficulty. The fetus dies during its journey through the maternal passage on account of being a misfit. Either its head is too large or the maternal pelvis is too small or both conditions are present. Is the greater cranial capacity of the more civilized human races is likely to be reproduced in the infant, the process of natural selection in a race of advancing culture must be directed toward enlargement of the mother's pelvis.

Intracranial injury in the infant may be caused also by insufficient mobility of the maternal pelvic joints. Before puberty the range of movement of the pelvic joints is negligible, but after puberty it increases up to about the twenty eighth year. After the twenty eighth year it gradually decreases until the menopause and then remains more or less constant. In examinations of male pelvises the author found that movement is very slight at all ages and after about the fortieth year becomes negligible. The percentage of stillbirths due to disproportion between the fetus and the maternal pelvis is lowest during the years when the normal mobility of the female pelvic joints is greatest and rises rapidly as the mobility decreases. Besides the mobility which is demonstrable in the pelvis of the non pregnant woman there is an increase in the range of movement during pregnancy, especially during the twenty weeks just preceding delivery.

Clinical determinations of the mobility of the pelvic joints were made at different stages of preg-

nancy in more than 200 women. A finger was placed just medial to the labia minora and passed along the lower border of the pubic arch to the joint, the latter being examined on the surface where the greatest range of movement occurred instead of on its deep surface where the urethra intervenes. The patient then rested her weight alternately on each foot. Because of the impossibility of making accurate measurements of the range of movement, the mobility was recorded as "almost absent," "slight," "fair," and "free."

Although it is impossible to draw many conclusions from such a small series of cases and cases in which so many factors were involved, the author states that when joint mobility is free the length of the second stage of labor is usually less than one hour unless some other factor such as the pelvic measurements or the weight of the fetus is particularly unfavorable.

During pregnancy, the sacroiliac and pubic joints are diarthroses. Movements of these joints are not always correctly described, consequently full range of nutation increasing the pelvic outlet and

counternutation increasing the inlet are seldom taken advantage of by obstetricians. In cases in which mobility of the joints is absent, such procedures as the Walcher maneuver cannot be expected to be of aid.

Stillbirth from intracranial injury occurs occasionally in easy deliveries and when the child is born before the arrival of the attendant. The author attributes the death in such cases to inadequate flexion of the head and pressure applied in the occipitofrontal diameter. A stillborn fetus with the mark of the forceps over the forehead or the anterior part of the temporal region is almost certain to have a tentorial tear.

In conclusion the author states that intracranial injury resulting from the process of natural selection can be combated in 3 ways: (1) the induction of labor before term, (2) enlargement of the pelvis by posture or pubiotomy, or (3) cesarean section. Conservative obstetrical methods may be employed to the disadvantage of the race as they subject the children of the best stock to the greatest hazards.

HARRY M. NELSON, M.D.



# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Sargent J C Ureteral Ectopia *J Urol*, 1930, **LXXI** 357

Sargent reports a case of ureteral ectopia in a girl twenty three years of age. The chief complaint was constant and persistent urinary incontinence since birth. In addition to the involuntary loss of urine normal urination occurred at normal intervals.

On examination the mucosa of the vulva was found thickened. The vulva was constantly moist with a clear, straw colored fluid. When a speculum was introduced into the vagina an elevated ridge of mucous membrane was seen running forward on the right anterior vaginal wall. This ridge showed a small opening from which drops of a clear straw colored fluid escaped intermittently. Whalebone bougies could be introduced through the opening to a distance equivalent to the length of the normal ureter. A No. 4 catheter could be introduced only 1 in.

The findings of cystoscopic examination were normal except that a third ureteral orifice was seen on the left border of the trigone. On catheterization of the three ureteral orifices a clear normal urine was obtained from each. A pyelogram made after the injection of a pyelographic solution into the three bladder ureters and the vaginal ureter revealed complete duplication of the upper urinary tract there being two independent pelvis and ureters to each kidney. The upper pelvis of the right kidney was small and rudimentary and its ureter led down to the ectopic opening in the vagina.

Ligation of the lower end of the ectopic ureter was attempted twice but after both ligations the incontinence recurred. The lower end of the ureter was therefore dissected free for about an inch a curved hemostat passed through the urethra and punched through the posterior bladder wall at the back border of the trigone and the free end of the ureter grasped with the hemostat drawn into the bladder and anchored by sutures to the bladder wall. The vaginal wall was then closed and the bladder drained by an indwelling catheter for six days.

The patient made a complete recovery and has since remained free from cystitis renal pain and incontinence.

On re-examination four months later the new ureteral orifice was located and the ureter catheterized its full length. The urine from the corresponding renal segment was clear and apparently normal.

In conclusion the author states that nephrectomy or hemi nephrectomy is the best method of dealing with ureteral ectopia. In the male the additional removal of the entire ectopic ureter is advisable.

The functional results of abdominal or vaginal implantation of an ectopic ureter into the bladder have not been sufficiently investigated. However, this procedure has cured the urinary incontinence. Vaginal ligation of the end of the ureter has been unsuccessful. In some cases, unusual anatomical variations found on exploration of the kidney may permit pyelopelvic, ureteropelvic, or uretero ureteral anastomosis.

The article contains a comprehensive review of the literature and a complete bibliography.

In the discussion O'Connor reported a case of ectopic ureter in a female which he treated successfully by ureteral transplantation into the bladder. He chose this method because the patient's family refused to allow nephrectomy.

GISFORDAHL stated that the Beer-Hagenbach method of controlling hemorrhage has simplified the operation of hemi nephrectomy.

HERNST said that in most cases of ureteral ectopia the condition should be corrected by surgery of the upper urinary tract. Since most ectopic ureters drain a double kidney the method to be used depends upon the functional condition of the kidney and the anatomy of the blood supply. Complete nephrectomy, hemi nephrectomy, or some type of pelvic or ureteral anastomosis may be performed depending upon the conditions found at operation.

J. FOWLER KEEF PATRICK, M.D.

Caporale I. Perireteral Sympathectomy (Sulla simpatectomia perireterale) *Arch ital di chir*, 1930 **LXXI** 469

The author describes experimental work with regard to unilateral and bilateral perireteral sympathectomy. Partial perireteral sympathectomy is soon followed by abolition of peristaltic movements of the renal pelvis and ureter and anuria on the side on which the operation is performed. It causes secretory disturbances including increased secretion of water and retention of waste products in the blood and tissues and excretory disturbances such as abolition of the peristaltic wave in the segment followed by a decrease in the energy and rapidity of the wave. Gradual atony of the renal pelvis and ureter and hydro ureteronephrosis result.

These facts are shown by functional, pyeloscopic, pyelographic and histological examinations. The changes in the first stage are due to the nerve lesion together with the effect of the trauma and the changed circulatory conditions. Those in the second stage are due partly to the connective tissue that forms around the tract operated upon which undergoes sclerosis and transforms the tract into an inelastic canal. After bilateral perireteral sympathectomy performed in two stages the changes are

more serious. They are particularly marked after the second stage. The author has never seen the partial necrosis of the ureter reported by Rochet and Tbevenot, and he has never observed reflux from the bladder into the ureter on roentgen examination.

The changes described indicate that operations on the ureter such as uretero ureterostomy and ureteroneostomy should seldom be performed, that during gynecological operations great care should be taken in the isolation of the ureter, and that, on account of the serious sequelæ which may follow it, periureteral sympathectomy is not advisable for the relief of persistent pain. AUDREY G. MORGAN, M.D.

### BLADDER, URETHRA, AND PENIS

Mills, R. G. Cystitis Emphysematosa. I Report of Cases in Men. *J Urol*, 1930, xxi, 289.

Gas-containing cysts or vesicles in the wall of the urinary bladder of man are rarely mentioned in the literature. They must not be confused with gas gangrene infection. The lesions are distinctly localized, being confined to the inner layers of the bladder wall, and are not a part of a general gas-producing bacterial infection. Eleven cases in the human being have been reported. All of the subjects were females.

In the three cases reported by the author, those of men, there was a marked and constant desquamation of epithelium. Mills states that it is difficult to determine the cause of this phenomenon. Although hæmorrhage occurred frequently in the vicinity of the vesicles and in their lumina, it is a secondary rather than a primary phenomenon. It may be due to congestion. In all of the cases there was definite evidence of cystitis. An abundance of leucocytes indicated the acuteness of the process. Foci of round cell infiltration were commonly seen. In all of the cases, evidence of tissue reaction extended down to the muscle layer, and in one case extended into it. Eosinophiles were noted frequently. The degree of distention of the blood vessels and oedema was proportionate to the mechanical interference from the formation of vesicles. The oedema was evidence of obstructive interference with lymphatic drainage. The walls of the lymphatics showed degenerative rather than inflammatory changes.

The vesicles varied greatly in size, number, and distribution. Some of them lay on the surface and others deeper in the tissues, but the majority neither invaded the muscle nor caused elevation of the bladder lining. The walls were composed of pre-existing connective tissue or possibly were due to chronic inflammatory changes.

Cystitis emphysematosa resembles colpitis emphysematosa and pneumatosis cystoides of the intestine in many respects but is to be regarded as a distinct pathological entity.

In one of the author's cases the condition was not present at the time of cystoscopic examination four months before the patient's death, and in the

two others no urinary symptoms indicating cystoscopy were presented. LOUIS NEUWELT, M.D.

Henline, R. B. Cystin Calculi. *Am J Surg*, 1930, viii, 581.

In cases of cystin stones, cystin crystals are usually found in the urine. The stones may cause renal colic, but very often their symptoms are very slight and transient. Large cystin stones can be demonstrated in the roentgenogram, but small ones cannot be visualized.

The treatment should include the administration of alkalis and the elimination of cystin from the diet. Sometimes surgery is necessary. Dilatation of the ureters and irrigation of the kidneys may be indicated.

The author reports three cases.

ELMER HESS, M.D.

McCarthy, J. F. A Consideration of Technique in the Management of New Growths of the Bladder. *J Urol*, 1930, xxi, 323.

In making a diagnosis of vesical neoplasms, it is necessary to take into consideration not only the number, size, location, conformation, and depth of penetration of the tumor into the vesical wall, but also its relation to the adnexa or adjacent viscous, the tolerance of the bladder to fluid inflow, the degree of involvement of the ureter, especially on the side near the neoplasm, the function of each kidney, and the blood chemistry.

The roentgen examination should include (1) a search for metastases, (2) a study of the size, shape, and position of the kidneys, (3) a stereoscopic roentgenogram of the bladder filled with an opaque medium (a 5 per cent solution of sodium iodide), and (4) when there is no demonstrable vesicorenal reflux, another stereoscopic exposure of the bladder filled with air.

Cystoscopic study should include the use of two types of instruments—first, the cysto urethroscope, and then the panendoscope—to obtain a true perspective of the neoplasm. An atypical growth in the portion of the bladder covered by peritoneum should be regarded as an intraperitoneal lesion until it is proved otherwise. Irregular or crateriform growths with a small surface area and with slight or no intravesical intrusion may be associated with extensive intramural involvement. Growths on or encircling the ureteral mouth may originate in the renal pelvis.

In cases of basal malignancy, rectal transillumination supplementing cystoscopy may reveal infiltration. The deep urethra should be inspected in all cases.

Biopsy specimens are of value for (1) information as to the procedure and prognosis, and (2) confirmation of clinical cure by an unusual method of treatment.

In carefully selected cases of multiple growths, carcinomatous or other recurrent tumors, borderline neoplasms, and not too extensive malignancies in

the very aged or debilitated and persons refusing open operation cystoscopic diathermy is indicated. With the aid of the author's graduated spherical electrodes it is possible to obtain greater surface contact and a longer current exposure with a lower amperage and deeper penetration than with the small electrodes formerly used.

For malignancy of the trigone region, radium irradiation or diathermy is now employed as a rule as the results of radical excision are seldom satisfactory. The author no longer employs any form of irradiation for infiltrating carcinoma of the bladder as such neoplasms often respond to diathermy. He emphasizes the importance of an exact knowledge of the extent and degree of infiltration of the lesion and of possible glandular involvement before treatment of an infiltrating cancer of the bladder is begun. Except in the anterior or anterolateral wall of the bladder, such knowledge can be obtained only by completely mobilizing the organ. Complete mobilization is absolutely necessary in every method of treatment. When once the bladder has been delivered and the limitations of the growth have been ascertained an encircling wall of electrocoagulation should be formed well beyond the neoplastic zone by puncturing the bladder wall with a copper electrode at points which are close enough together to become continuous when the current is on. The growth proper should then be destroyed in the usual manner with large electrodes low amperage and prolonged time of contact.

Growths of proved malignancy situated in the dilatable part of the bladder are best treated by radical excision. Certain types of neoplasm encircling the ureteral mouth may also be treated in this way.

The author does not favor ureteral reimplantation as his results from this procedure have not been good. He believes that total cystectomy is not being done either frequently or early enough. When the bladder becomes very painful either the disease focus should be removed or the organ should be extirpated. The disposition of the ureters after cystectomy is still an open question. The author prefers abdominal ureterostomy because after this procedure patients whose condition is apparently hopeless may become economically useful and live for years in comparative comfort.

Whether, following diathermy the bladder should be closed or a fistula should be maintained for follow-up examinations is still undecided. The author prefers the fistula as it not only permits repeated panendoscopic observation but affords the possibility of additional diathermic treatment with much larger electrodes. **LOUIS NEUWELT M.D.**

**Grossmann F.** Radiotherapy of Cancer of the Penis (*Die Radiotherapie des Peniskrebses*) *Vestnik Rentgenol* 1929 vii 225

The literature to date reports only 106 cases of carcinoma of the penis treated with radium. This newer therapy is of value particularly because cancer

of the penis often occurs in young adults in whom sex function is still active. In the Leningrad Roentgen Institute nine cases have been treated by irradiation. Radium needles were inserted into the tumor and radon or radium plaques used either in the inguinal region or on the tumor itself. Enlarged glands were treated with the roentgen rays. Five of the nine cases were clinically cured. Two of the patients with a clinical cure have been under observation for two years and eight months and one year and four months respectively and two for one year. One of them cannot be traced. In two cases in which an apparent cure was obtained at first the penis was amputated later because of a suspicion of malignancy but microscopic examination of the specimen failed to reveal malignancy. The patients have remained well during an observation period of two and one and one half years respectively. In one case in which local healing was obtained metastases were already present in the deep pelvic glands. The results of irradiation of these glands cannot yet be determined. In only 1 case was radium treatment of no value. **КАРЕЦКОВА (Z)**

## GENITAL ORGANS

**Aleksejew M. and Dunnjewsky L.** Prostatic Carcinoma in Childhood (*Prostatacarcinom im Kindesalter*) *Ztschr f urol Chir*, 1930 xxv 64

The authors report a carcinoma of the prostate in a child one year and eight months old which extended three fingerbreadths above the symphysis in the form of a pear shaped tumor. The percussion note over the neoplasm was dulled. The patient suffered from extreme frequency and pain on urination. Catheterization could be accomplished only with a urethral catheter. Cystoscopy was impossible even under narcosis. The roentgenogram disclosed a large shadow which was falsely interpreted as that of a bladder stone. Suprapubic cystostomy revealed no stone but a marked tumor like thickening of the bladder wall. The carcinomatous nature of the neoplasm was established by microscopic examination at autopsy.

The authors believe that as carcinoma in childhood is decidedly polymorphic and often resembles sarcoma histologically many of the tumors diagnosed as sarcoma of the prostate may have been carcinomas or combinations of sarcoma and carcinoma. **A. KOPPELBERG (Z)**

**Potti V. and Faldini G.** Diffuse Osteoplastic Carcinoma of the Skeleton from a Clinically Unrecognized Primary Carcinoma of the Prostate (*Carcinomi osteoplastici diffusi dello scheletro da carcinoma primitivo della prostata clinicamente ignoti*) *Chir d'organi di movimento* 1930, iv 305

The case reported was that of a man fifty eight years of age who first complained of pain about ten months before death. No bone in the body seemed to be exempt from metastasis. Metastatic nodules were found also in the lymph nodes adrenal

pleura, and dura mater. On clinical examination no pathological changes were noted in the prostate. Microscopic examination of the prostate revealed abundant connective tissue, proliferation of acini, and invasion of the muscular and connective tissue elements of the gland by atypical epithelial cells, many of which showed mitotic figures.

ANTHONY R. CAMERO, M.D.

**Pana, C.** Leiomyomata of the Malformed Seminal Vesicle and Vas Deferens (Leiomioma della vescichetta seminale e del dotto deferente su base malformativa) *Arch. ital. di urol.*, 1930, vi, 29.

The case reported was that of a man of fifty nine years who was married and had two children. The tumors had never caused any symptoms and were found by chance on autopsy. A tumor the size of a pear, which was found in the rectovesical pouch, had a twisted pedicle that was connected with a diverticulum of the left seminal vesicle. The left testicle was atrophied, and on its posterior surface, at the point where the canal of the epididymis became continuous with the vas deferens, there was a small hard nodule between the tunics. The author thinks it originated from the muscle tunic of the vas deferens, as the anterior part of it was adherent to the hypertrophied wall of the latter. As the vas deferens and the seminal vesicle are a single structure, it is not surprising that the same cause should have produced tumors of both. The neoplasms were diagnosed as

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Nowicki S The Pathogenesis of Infectious Osteitis An Experimental Study (Pathogénie de l'ostéite infectieuse Etude expérimentale) *Chir clin Polonica* 1929 1 1

The author states that the clinical forms of infectious osteitis can be reproduced in animals by introducing old virulent cultures of staphylococcus aureus into the artery, of an extremity after ligating the principal vein. When the inoculation is made into the vein, pyæmia generally supervenes and purulent foci are rarely formed in the bones.

Nowicki's experiments were performed on 50 young dogs and 100 rabbits. The osteitis produced in the dogs resembled the human form of the condition more closely than the osteitis produced in the rabbits. The most marked changes occurred after destruction of the periosteum, but losses of substance in the osseous tissue also contributed to the evolution of the condition.

The disease develops differently after local infection as compared with general infection of the bone. After local infection the general symptoms are much less severe than after infection through the blood vessels and the suppurative process is limited to the region directly infected. Infection of the medullary canal alone presents a chronic appearance and rarely extends to the osseous tissue. The staphylococci may remain in the medullary canal for several months without producing very marked changes. The red and the yellow marrow react similarly to the infection.

Osteitis is not caused by staphylococci scattered in the bone. It results only when large collections of sufficiently virulent bacteria are present. The implantation of such collections in the bone at the beginning of the disease depends on the anatomical disposition of the blood vessels in the bone. The collections of bacteria are found most frequently (1) below the periosteum near the epiphysis (2) in the haversian canals of the superficial layers of compact osseous tissue and (3) in the marrow of the diaphysis near the conjugal cartilage. In these regions abscesses form rapidly.

In the haversian canals of the superficial strata of the compact osseous tissue thrombi are formed in the first days of the disease. Their formation is caused by the infection but is probably favored also by circulatory disturbances which are easily produced in the narrow vessels in the superficial layers of the compact tissue.

The necrosis of the bone occurs primarily in the osseous network near the surface of the bone and extends, according to the evolution of the suppu-

tion into the haversian canals and the medullary spaces of the spongy tissue. Destruction of the periosteum has an important influence on the localization and extent of the necrosis of bone.

New bone is produced especially from the periosteum, but also, to a slight degree, from the bone marrow, and usually develops excessively, surrounding the necrosed bone. It sometimes appears where necrosis of bone cannot be demonstrated histologically. If the periosteum has undergone cicatrization over a wide area as a result of the inflammatory process new bone does not form. Necrosis of bone in osteitis does not always stimulate osteogenesis.

Absorption is increased in the bone by the action of the osteoclasts and the granulation tissue. Separation of sequestra or even greater losses of osseous tissue may result. The connective tissue may proliferate in an exaggerated manner in the periosteum as well as in the bone marrow. Pace

Pescatori F The Physiopathology of the Joint Cavity in Relation to the Synovia (La fisiopatologia del cavo articolare in rapporto al componente sinoviale) *Chir d organi di movimento* 1930 XIV, 451

The author reports the findings of examinations of the synovia in cadavers and the results of experiments on guinea pigs in which bacteria were injected into the joint cavities to test the defensive action of the synovia. In the bodies of persons dead of diseases which necessitated their remaining in bed for a long time the synovia had gradually decreased in amount until it was reduced to an almost imperceptible quantity, no matter what the nature of the disease.

Of all the body fluids, the synovia has the highest hydrogen ion concentration (pH 7.95). This concentration is due to the fact that it must keep the synovia its characteristic constituent dissolved in order to perform its lubricating function. Because of its high hydrogen ion concentration the synovia inhibits the growth of bacteria introduced into the joint cavity. Its high hydrogen ion concentration is probably related more or less directly to certain forms of arthritis. In two cases of uricemic arthritis with numerous incrustations of uric acid in the synovial membrane and asbestiform degeneration of the articular cartilages, the author found the hydrogen ion concentration of the synovia considerably reduced. He believes that the precipitation of uric acid and insoluble urates in the walls of the joint cavity is furthered by the presence of the alkali salts dissolved in the synovia while the presence of the uric acid lowers the hydrogen ion concentration. He suggests that this hypothesis be studied further with regard to the etiology of arthritis.

In Pescatori's opinion it is possible that the special ionic condition of the synovia is maintained by the reticulohistiocytic layer of the synovial membrane described by Franceschini. This is a semipermeable membrane interposed between the colloidal system of the synovia, which has a high salt content, and the plasma of the circulating blood.

AUDREY G MORGAN, M D

Burman, M S, and Milgram, J E. Hæmangioma of Tendon and Tendon Sheath. *Surg, Gynec & Obst*, 1930, 1, 397

The authors add six cases of hæmangioma of tendons and tendon sheaths to the ten cases previously reported. Ewing traces the origin of tumors of this type to vascular segments which retain their embryonal character. Fitzwilliams' findings indicate that the neoplasms are congenital.

The hæmangioma manifests itself by a growth of variable size and outline, depending upon its location and whether it arises from the tendon or tendon sheath. Pain on pressure is due either to angiolithic concretions or nerve irritation, depending on the location of the neoplasm. The consistency of the tumor is also variable, depending upon its limitations. The presence of angiomas of the skin and the aspiration of fresh blood from the tumor are important signs in the diagnosis. Angiolithic concretions may be demonstrated in the roentgenogram.

Hæmangiomas of tendons and tendon sheaths occur more frequently in the upper extremities than in the lower extremities. They are usually soft and red on section and contain fibrous tissue, thrombi, and concretions. Microscopically, they resemble the cavernous angioma, and occasionally they contain an admixture of cartilage and fibrous tissue. They must be differentiated from malignancy of the skin, tumors of the muscles and tendon sheaths, myelomata, lipomata, fibromata, chondromata, sarcomata, and inflammatory lesions of the tendon sheaths.

The treatment consists in radical excision when ever possible. Irradiation with the roentgen ray or radium emanations has also been used. The prognosis is good.

RUDOLPH S REICH, M D

Panner, H J. A Peculiar Affection of the Capitulum Humeri Resembling Legg-Calvé-Perthes Disease of the Hip (Eine eigentümliche an die Calvé-Perthesche Hüftgelenkerkrankung erinnende Krankheit des Capitulum humeri). *Ugeskr f Læger*, 1930, 1, 1

Panner reports three cases in which injury to the elbow caused only mild clinical symptoms—slight pain and interference with extension—but the roentgenogram showed changes in the structure of the capitulum humeri. The patients remained under observation for several years. The incipient stage of the condition was characterized only by a fraying out and unevenness of contour of the center of ossification. In time, the center became smaller, deep indentations were formed on its border, and irregular rarefied and condensed areas appeared

within it. In the course of from one to three years it resumed its normal aspect. This condition strikingly resembles Legg-Calvé-Perthes disease of the head of the femur.

The treatment is purely expectant. Complete restoration to normal is to be anticipated, but may require years.

PORT (Z)

Blaine, E S. Congenital Radio Ulnar Synostosis.

*Am J Surg*, 1930, VIII, 429

Congenital radio ulnar synostosis is the fusion of the upper portions of the radius and ulna in a greater or less degree of pronation which renders supination impossible. The extent of the fusion varies from 1 to 6 cm. The condition was bilateral in a little more than 50 per cent of the cases studied. It is found more frequently in males than in females. In several cases it occurred in successive generations of the patient's family.

In certain strains this peculiar synostosis seems to be of a dominant mendelian character. While its appearance does not exactly follow the mendelian formula, some complex variation of this theory may explain it.

In most of the cases in which an attempt was made to relieve the condition surgically, the result was unsatisfactory. However, Dawson reported a case in which he obtained an excellent result by a six stage operation.

The author reports a case of radio ulnar synostosis in a man twenty eight years of age.

H EARLE CONWELL, M D

Leriche, R. The Nature of Kuemmel's Disease (Sur la Nature de la maladie de Kummel). *Lyon chir*, 1930, XXVI, 27

The author states that in order to understand Kuemmel's disease it is necessary to know the changes that are produced in the structure of bone by trauma with or without fracture. Every traumatism, wherever it occurs, is first of all, from the biological standpoint, an injury to the vasomotor system which is manifested by active vasodilatation. Every active vasodilatation causes not only a considerable change in the nutrition and condition of the connective tissue, but also rarefaction of bone in the surrounding region. This hyperæmic rarefaction is one of the conditions essential for the repair of fractures. Local hyperæmic resorption of bone does not change the calcium content of the blood as the calcium liberated is not absorbed into the blood stream. As the percentage of calcium in the blood remains constant, new bone is formed only in proportion to the hyperæmic rarefaction.

Kuemmel's disease, which combines rarefaction and ossification, is only a special form of post-traumatic osteoporosis from hyperæmia. The very slow rarefaction, the osseous apposition, the free interval between the initial traumatism and the stage of ankylosing spondylitis are easily explained when the poor circulatory conditions of the perispinal soft tissues are considered. These are such

that repeated hyperæmias are necessary to start rarefaction with consequent gradual painful softening and effacement of the bone and ultimate ankylosis. Repeated hyperæmias are caused by constant internal traumata sustained by a spine which has lost its equilibrium. Any condition which precipitates or augments the process of vasodilatation, such as intercurrent infection, and any condition which causes excessive loss of calcium from the bones, such as pregnancy and the operative formation of a biliary fistula accelerates the condition. The traumatic malacia of the semilunar bone known as "Kienboch's disease" resembles the traumatic malacia of the spine in many respects. In Kienboch's disease also there is sometimes rarefaction, sometimes condensation, and sometimes a mixture of both.

Theoretically fracture is not necessary for the production of Kummell's disease but the circulatory conditions in the spine are not favorable to the production of osteoporosis without fracture.

Leriche is of the opinion that the pain persists only as long as there is active rarefaction and that the nerves of the ligaments play an important rôle in articular sensibility. He believes also that articular sensibility is influenced by the composition of the blood and local fluids. In support of this theory he cites a case of painful ankylosing polyarthritis which appeared to be due to hypercalcaemia and in which with the return of the blood calcium to normal after the removal of one of the parathyroid glands the pain ceased completely.

Leriche states that the only way to prevent the onset of Kummell's disease after fracture is to keep the spine in such a position that it cannot be bent or put out of equilibrium. Immobilization in bed is not sufficient. Whenever a vertebra has been flattened a bone grafting operation for ankylosis of the spine should be done at once. Leriche has performed such an operation five times. In four cases the results were excellent. In the fifth case the operation was done too recently to warrant an opinion as to the end result.

In addition to immobilization of the spine arrest of the hyperæmia is necessary. Leriche suggests that this might be accomplished by resecting several of the sinusvertebral nerves. PAGE

#### Graham R V. Experimental Considerations in Perthes Disease. *Med J Australia*, 1930, 1, 207

The author reports experiments carried out on goats to determine the part played in the causation of the pathological changes observed in Legg-Perthes disease by changes in the supply of blood conveyed to the growing femoral epiphysis through the ligamentum teres. His findings are summarized as follows:

1 Division of the ligamentum teres in goats was followed by changes which varied according to the age at which the division was done and the time which elapsed between the division of the ligament and the removal of the head of the femur for exam-

ination. In goats more than six months old the changes were almost negligible.

2 In goats less than six months old necrosis and absorption of bony trabeculae ensued in an area underlying the attachment of the ligamentum teres to the head of the femur, the shape of which was roughly that of an inverted cone.

3 In most instances sagittal section revealed a definite flattening of the epiphyseal plate in sagittal section due apparently to a disproportion between the rate of growth of the cartilage cells on the two sides of the epiphyseal plate. Specimens suggested that this may lead to deformity of the cap similar to the deformity occurring in the early stages of Legg-Perthes disease.

4 These changes tended to undergo natural repair when the goat was allowed unrestricted liberty and given an ordinary diet.

5 The importance of the ligamentum teres as a source of blood supply to the femur appeared to decrease as the age of the animal increased.

6 Roentgen ray evidence of changes following division of the ligamentum teres was inconclusive even in the presence of definite early macroscopic changes.

7 It was impossible to produce typical Legg-Perthes disease by simple division of the ligamentum teres. H EARLE CORWELL M.D.

#### Follinsson, A. A Cyst of the External Meniscus of the Knee (*Kyste du ménisque externe du genou*). *Rev d'orthop*, 1930, XXVII, 44

A man twenty-five years of age entered the hospital on account of a swelling on the external surface of the left knee which had appeared nine months previously after a traumatism. In spite of treatment with hot air and massage, the injured area remained painful. The pain radiated upward and toward the back, and was worse at night and after fatigue. Recently locking of the joint had occurred. Two months before the patient entered the hospital a gradually increasing swelling had appeared in front of the tendon of the biceps and just above the head of the fibula. This swelling was round, smooth and painless the size of a walnut, elastic and covered with normal skin. On flexion of the knee it seemed to disappear but on extension of the knee it returned to its original size. There was no point of pain in the bone and no fluid. As the inferior pole of the swelling touched the head of the fibula, a diagnosis of synovial cyst with its origin at the upper articulation of the fibula with the tibia was made.

At operation the cyst was found not to rest on the joint but to be closely adherent to the articular capsule of the knee. When the capsule was opened, it was discovered that the cyst had developed on the external border of the semilunar cartilage at the juncture of the anterior and middle thirds. Follinsson did not do a total meniscectomy, but cut in the middle of the meniscus preserving the continuity of the fibrocartilage. The joint was mobilized on the tenth day, and the patient discharged on the

seventeenth day with excellent function. Perfect function has been retained for more than ten months.

Macroscopic examination showed the specimen to be a multilocular cyst with voluminous external cavities and very small intramembranous internal cavities. The cyst contained clear gelatinous fluid. A bacteriological examination was not made and the fluid was not injected into animals.

Microscopic examination showed the borders of the cystic cavities to be regular and distinct. There was no epithelial lining. Other observations were: an oedematous appearance of the fibrous tissue with a decrease in its acidophilia, a homogeneous area of amorphous substance staining deeply with hematein eosin, a fibrillary appearance, and cleavage in the center of the area (corresponding to the cystic cavity). There were no vascular changes and no cartilage cells. The lesion was therefore a multilocular pseudocyst of the external semilunar cartilage of the knee.

The article contains two diagrams, one showing the structure of the meniscus, and the other the operation.

AUDREY G. MORGAN, M.D.

### SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

**Key, J. A.** Arthrodesis of the Shoulder by Means of Osteoperiosteal Grafts. *Surg., Gynec. & Obst.* 1930, 1, 468.

Key recommends the use of osteoperiosteal grafts for arthrodesis of the shoulder joint. After exposure of the joint by means of the saber cut incision of Codman, the anterior and posterior portions of the deltoid are split. The acromion is separated from the clavicle at the acromioclavicular joint and then sawed through with the lateral portions of the deltoid and the skin and subcutaneous tissue. The cartilage and diseased bone of the head of the humerus and glenoid are completely removed and the periosteum is raised from the upper end of the shaft of the humerus and from the scapula around the margins of the glenoid. The periosteum is removed from the deep surface of the attached tip of the acromion to prepare it for apposition with the upper surfaces of the humerus. Three osteoperiosteal grafts 2 in. long are removed from the tibia and inserted around the border of the glenoid beneath the elevated periosteum of the scapula and the denuded head of the humerus. Several other grafts are placed around the glenoid with the humerus in the desired functional position—abduction of 90 degrees and anterior flexion of 25 degrees. A nail is driven through the upper end of the humerus into the center of the glenoid. The acromion is then sutured to the clavicle by means of chromic catgut and a plaster jacket is applied. After from twelve to fourteen days this plaster jacket is removed, the wound is dressed, and another cast is applied to be left in place for about three months. Then an abduction splint or removable plaster cast is applied and the degree of ankylosis is checked by X-ray examination.

Key recommends this procedure for tuberculosis of the shoulder joint, complete and permanent paralysis of the deltoid and other chronic lesions. Its advantages over other procedures are that it gives more complete exposure of the shoulder joint and supplies extra bone where this is needed.

RUDOLPH S. REICH, M.D.

**Wilmoth.** Extra-Articular Arthrodesis of the Hip for Coxalgia in the Stage of Development (Arthrodesse extra articulaire de la hanche pour coxalgie en évolution). *Bull. et mém. Soc. nat. de chir.* 1930, 1, 153.

**D'Allaines.** Coxalgia, Extra-Articular Arthrodesis (Coxalgie, arthrodesse extra articulaire). *Bull. et mém. Soc. nat. de chir.* 1930, 1, 153.

**Delahaye.** Presentation of Anatomical Specimens of Arthrodesis of the Hip for Old Coxalgia (Présentation de pièces anatomiques d'arthrodesse de hanche pour coxalgie ancienne). *Bull. et mém. Soc. nat. de chir.* 1930, 1, 153.

These three papers were read by SORREL, who added seven cases of his own, in four of which the results of extra articular arthrodesis were good and in two of which they were less satisfactory. The seventh case could not be followed. Sorrel also discussed the technique of the operation.

WILMOTH reported the case of a man twenty years of age who was shown by clinical and roentgen examination to be suffering from a severe active coxalgia. At the time of operation, the great trochanter was detached and a flap measuring 4 by 5 cm. was cut in the iliac wing, above the acetabulum, and turned over on the capsule. The trochanter was then placed on the iliac flap and fastened to the diaphysis by a strong Lambotte screw. After suture of the soft parts without drainage, correct position was maintained by means of a plaster cast extending from the pelvis to the leg.

Three months later the pain had ceased, but ankylosis was not yet complete. The patient showed improvement for some time and became able to walk, but ten months after the operation an abscess formed. This did not communicate with the joint, but was believed to be related to the screw. The screw was therefore removed. The bone graft was found to be entirely solid. Tubercle bacilli were cultured from the pus and the wound was slow in healing, but at the present time, a year and a half after the operation, the limb is in good position, the hip is completely ankylosed, the patient can walk easily, and his general condition is good.

D'ALLAINES' patient was a woman twenty-eight years of age. The extra articular arthrodesis was followed by immobilization for six months. At the end of that time an apparatus was worn for six months. Eighteen months after the operation the patient was able to resume normal life. The ankylosis is now complete and the symptoms of active coxalgia have disappeared.

The anatomical specimen described by DELAHAYE was obtained at autopsy from a child eleven years of age who died of tuberculous nephritis a little



more than two years after arthrodesis for coxalgia which had been present since the age of six months old. Resection had been performed at the age of five years. Two years later, after complete cicatrization of the fistulae and the operative wound there was complete destruction of the head and neck of the femur with considerable ascent of the femur and a pseudarthrosis which made walking impossible. Arthrodesis was carried out without a bone graft by wide freshening of the internal surface of the trochanter and the corresponding external surface of the wing of the ilium. The limb was then immobilized in plaster. Consolidation was complete at the end of a year and a half. The child had been walking with a firmly ankylosed hip for six months when first Recklinghausen's disease and then nephritis developed. The leg showed adduction but Delahaye was planning to correct this by another operation. Roentgenograms and photographs of the specimen demonstrate the solid ankylosis obtained. Perfect fusion of the bones had resulted.

Sorrel thinks that bony union by the simple procedure of freshening the surface of the bones has been too much neglected in favor of bone grafting.

FLORENCE A. CARPENTER

**Fruchaud H. and Audureau J. Extra Articular Arthrodesis of the Hip for Grave Coxalgia in Evolution in an Adult (Arthrodèse extra articulaire de la hanche pour coxalgie grave en évolution chez une adulte).** *Bull. et mém. Soc. nat. de chir.*, 1930 lvi, 176.

In January, 1928 Fruchaud and Audureau saw a twenty-two year old girl with coxalgia that was already accentuated and had resulted in flexion, abduction, and external rotation of the thigh and suppression of all motion in the hip. The general condition was good and the lungs were normal. The roentgenogram showed considerable bone destruction. Redressement was attempted under anæsthesia and a cast applied.

When the cast was removed the following September, a roentgenogram showed that the disease had developed rapidly. The immobilization seemed to have had no influence upon it and intra-acetabular pseudarthrosis with perhaps perforation of the floor of the acetabulum appeared to be the end toward which the process was developing. Extra-articular arthrodesis by Mathieu's procedure was therefore done with the aim of arresting the ascent of the femur and obtaining better immobilization. A bony bridge was formed between the iliac fossa and the great trochanter by bone grafts with periosteum obtained from the tibia. Above the grafts were applied to a wide bone flap detached from the external surface of the iliac bone and turned back onto the superior surface of the neck of the femur, and below they were made to enter the great trochanter the upper border of which was widely opened with a chisel. As the great trochanter was extensively involved it was necessary to place the grafts at this point directly into diseased tissue. The

wound was closed without drainage, and a bivalve cast applied.

Healing occurred by first intention and without incident. A roentgenogram made in April, 1929, showed the grafts forming a bony bridge from the wing of the ilium to the great trochanter. A roentgenogram made in August, 1929, showed that the grafts had fused with the bones of the vicinity, had increased in size, and had formed an apparently very solid bridge. It appeared that the acetabulum and the head of the femur were beginning to recalcify. The hip was dry and the femur seemed to be fused with the pelvis. The joint was entirely immobile. There was no adenopathy, and the general health was excellent. The patient walked with the aid of a light celluloid apparatus.

LANCE, who read this report to the Society, discussed the indication and contra-indications of extra-articular arthrodesis. He stated that until recently there had been only two indications—insufficiency of the ankylosing process and insufficiency of the healing of the tuberculous focus. He believes that in many cases there is no danger in intervening before the culture is extinct provided it is old. Therefore the evolution of certain coxalgias may be cut short. Lance operated with success in one case in which the coxalgia had been present for eighteen years. A contra-indication in old cases is the presence of numerous fistulae with secondary infection. A third indication may be presented by the period of onset of a grave form which promises to last for a long time and to terminate in poor function of the hip.

FLORENCE A. CARPENTER

## FRACTURES AND DISLOCATIONS

**Spied J. S. Bone Grafts in Ununited Fractures.** *South M. J.*, 1930 xlvii, 179.

As the findings of experiments on animals with regard to the best methods of grafting bone have been conflicting, our knowledge in this field of surgery has been gained mainly from practical experience in clinical cases. Osteogenesis from the periosteum *per se* probably does not occur, and as at least the superficial layer of periosteum is stripped off in the removal of the graft there seems to be little advantage in trying to preserve all of it. The problem as to whether the graft remains viable or acts merely as a scaffolding for new callus is still unsolved, but it appears probable that the framework of the graft ultimately becomes fused into the new callus by infiltration of the callus elements.

When union fails to occur the graft may be gradually absorbed or, particularly when infection supervenes, may be cast off as a sequestrum. If the graft is used to bridge over separated fragments, Roux's law applies to it as to normal bone and a functional hypertrophy results, especially in children.

The most frequent sites of non-union are the middle third of the humerus and the junction of the middle and lower thirds of both bones of the forearm and the leg.

The theoretically ideal type of graft and the one giving the best results in the author's experience is the autogenous bone graft fixed in position with autogenous bone nails. In some way such grafts act as stimulants to new bone formation. They are of 4 types (1) osteoperiosteal grafts, which give excellent results, but can be used only when mechanical fixation by them is unnecessary, (2) intramedullary grafts, which are useful in maintaining bone position, but may delay callus formation, (3) onlay grafts, which must be removed from near the fracture and must therefore often be limited in size and are impaired by sclerosing osteitis or osteoporosis near the fracture line, and (4) massive onlay grafts.

The massive onlay graft with autogenous bone nails was used in 100 cases reviewed by the author. The technique requires 2 operating teams. When only 1 operator is available, fixation by beef bone screws should be done to save time. The graft must be taken from healthy vascular bone. A large fresh bed must be prepared for it, and it must be fixed to the bed firmly. The bone ends should be freshened, intervening scar tissue removed, and the medullary cavities opened and brought into contact when possible. The graft should not be fixed under tension, and preferably should not bridge a gap between bone ends. The bones should be covered by healthy skin, a preliminary plastic operation being performed if it is necessary to insure such a covering. After a certain period, resumption of function stimulates solid union. It should be remembered however, that the weakest stage in the life of the graft is between the sixth and eighth week, and re-fracture during this time should be guarded against by the use of braces.

In cases of old infected or compound fractures no bone grafting should be attempted until at least a year after all evidence of infection has disappeared, as re-infection is probable if operation is done too early. A rigidly aseptic technique is necessary. Infection developed after bone grafting in 19 (17 per cent) of 109 of the author's presumably clean cases. In none, however, was it severe, and in 15, solid union was obtained. Of 120 bone grafting operations performed by the author, 9 (7.5 per cent) were failures. Speed concludes that successful results may be expected from the autogenous massive onlay graft in approximately 90 per cent of cases of non union in the shafts of long bones.

CHESTER C. GUY, M.D.

Constantini and Gonnot. Fractures of the Spine of the Tibia (Les fractures de l'épine tibiale). *J de chir.*, 1930, xxv, 161.

In this article the history of fractures of the tibial spine, about which relatively little has been written, is traced from 1875 to the present time, and the anatomical relations of the tibial spine are reviewed. Fractures of the tibial spine may involve the intercondylar eminence in its entirety or only the internal or external tubercle. In some cases a complete or

partial fracture of the spine may be combined with a fracture of the upper extremity of the tibia.

The intercondylar eminence may be fractured by a bullet, but as a rule fractures of the tibial spine are caused indirectly by a tearing movement on the part of the crucial ligaments. In some cases, the tubercle, being exceptionally high, is cut off by the condyles of the femur.

In 90 per cent of the cases, the fracture occurs in an adult. Nearly all of the subjects are men. The diagnosis may not be made until several months after the accident. As a rule there is immediate loss of function of the limb. Hemarthrosis is a constant sequela. Deviation of the leg in abduction is often noted, but does not always signify involvement of the internal lateral ligament. The diagnosis is based on the history, hemarthrosis, the existence of abnormal movements, and the findings of roentgenography. Roentgenograms made in the position recommended by Beclere give precise information by widening the articular interline and showing the profile of the tibial spine. Fracture of the tibial spine must be differentiated from traumatic lesions of the meniscus and rupture of the crucial ligaments.

At the time of the accident the hemarthrosis should be evacuated by puncture. The limb should then be immobilized preferably in plaster, for about two months. At the end of that time, mobilization and massage should be begun with care. If this treatment does not give satisfactory results, the bony fragment should be ablated along with the floating portion of the crucial ligament. A transverse incision curved slightly downward should be made. Old cases are not suitable for osteosynthesis. Early operation should be avoided because there is a chance that recovery may take place without surgical intervention, moreover, the resection of the anterior crucial ligament is not accompanied by any particular disturbance unless the rest of the ligamentous apparatus of the knee is markedly dislocated, and it is not advisable to introduce metallic bodies such as screws into the joint.

When orthopedic treatment is used energetically, immediately after the traumatism, the functional result may be satisfactory. The average minimal incapacity for work is six months. The ultimate in capacity in the most favorable cases is probably not under 15 per cent as the patient always experiences articular pains and the extent of movement of the leg remains limited. When the fracture of the tibial spine is associated with articular fractures, the in capacity is increased from 10 to 15 per cent.

The authors report four cases.

PAGE

SLŘivaneK, V. Isolated Fracture of the Tuberosity of the Navicular Bone and Os Tibiale Externum (Isolierte Fraktur der Tuberositas ossis navicularis und Os tibiale externum). *Čas lékařsk.*, 1929, II, 1721, 1764, 1767.

The author describes the clinical manifestations of isolated fracture of the tuberosity of the navicular bone and reports two cases. The fracture may be

produced by direct or indirect force, but because of the protected position of the bone, direct force is seldom responsible. It is to be considered an avulsion fracture of the insertion of the posterior tibial muscle, and occurs with pronation, dorsiflexion and abduction of the foot. A rupture of the deltoid ligament may lead to a fracture which may be regarded as the beginning of luxation of the talonavicular joint. When the tuberosity protrudes to a marked degree its liability to fracture is increased.

Fracture of the tuberosity of the navicular bone is to be differentiated from the os tibiale externum which, being preformed in the development of the cartilaginous structure of the foot bones, rarely becomes ossified and therefore is not to be considered a sesamoid bone. As the os tibiale externum does not produce any clinical symptoms and does not change the shape of the foot, it is usually discovered only accidentally on roentgen examination. As a rule it is bilateral, a fact of importance in its differentiation from avulsion fracture of the navicular bone. The diagnosis of both can be made only from the roentgenogram as the clinical signs, for example of a neglected fracture without acute symptoms and a painful pes planovalgus with an os tibiale externum may be similar. Fracture is characterized by greater dislocation of the fragment, irregularity of the edges and especially the shadows of callus.

The treatment of fracture of the tuberosity of the navicular bone is chiefly conservative with fixation by a dressing for from two or three weeks. When there is dislocation the foot should be fixed in supination adduction, and planter flexion. When healing does not occur and the symptoms persist under this treatment wire suturing or extirpation

of the fragment and suture of the tendons and ligaments should be considered. HANS EHRLEICH (Z)

**Brown W L and Brown C P** Fractures of the Bones of the Foot Other Than the Os Calcis. *J Am M Ass*, 1930, xciv, 461.

The authors emphasize the importance of greater care in the diagnosis and treatment of fractures of the bones of the foot. They report forty six cases of fractures of the foot exclusive of fractures of the os calcis. Eighteen were cases of multiple fractures.

Fractures of the astragalus are of two types—those with displacement and those without displacement. In cases without displacement a plaster cast is applied and healing results without serious disability. In cases with displacement surgical correction of the deformity with removal of the dislocated bone fragments if necessary, is usually indicated.

The anterior pillar of the longitudinal arch is made up of the inner tarsal bones posteriorly and the first second and third metatarsals anteriorly. It is obvious that fractures of any of these structures are serious, impairing the function of the longitudinal arch and therefore interfering with weight bearing. In order to restore the function to as nearly normal as possible, fractures of any of these bones must be treated with extreme care.

Fracture of the fourth metatarsal is less frequent. The methods of diagnosis and treatment are the same. The fifth metatarsal is quite susceptible to fracture because of its location and the attachment to it of ligaments and tendons.

Fractures of the phalanges and sesamoids are easily overlooked. The authors therefore suggest routine roentgen examination for their diagnosis.

KARLOLPH S REICH MD

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Milhaud, M. A Bullet Wound of the Thigh, Aneurism of the Femoral Artery in Scarpa's Triangle, Ligation, Recovery (Plaie de la cuisse par balle, anévrisme de la femorale dans le triangle de Scarpa, ligature, guérison) *Bull et mém Soc nat de chir*, 1930, lvi, 150

In the case of a man seventy-one years old who sustained a wound of the thigh from a small revolver bullet a diffuse aneurism of the femoral artery became evident four days after the injury. After twenty eight hours, during which time Milhaud tried to relieve the condition by intermittent compression, the artery was exposed at the site of the aneurism in Scarpa's triangle, the superior pole of the encysted hæmatoma was liberated, and a clamp placed on the artery at this site to stop the flow of blood into the sac. When sufficient collateral circulation was established, the artery was ligated.

After the operation the patient was closely watched but no threatening symptoms developed, and complete recovery resulted. When he was examined four years later, he showed no trace of oedema of the foot or leg and was able to walk without fatigue. The thigh on the side of the ligation presented the same appearance as the other thigh. The only change was a diminution of sensitiveness to touch in certain zones on the outer surface.

MOURE, who read this report for Milhaud, believes that the successful result was due largely to Milhaud's waiting as long as he did before intervening with ligation, the delay, as well as the attempts at compression, favoring the establishment of a collateral circulation. He stated that ligation of a large arterial trunk is less grave when it is done in the treatment of aneurism than when it is done in fresh accidental wounds. He emphasized that in the treatment of wounds of the large arterial trunks of the extremities, ideal surgery is not that which realizes systematically the integral anatomical restitution of the vessel, but that which aims at preserving a useful limb by the simplest procedure and is exactly adopted to the requirements of the particular case.

FLORENCE A. CARPENTER

Delater, G., and Hugel, R. The Mechanism of the Pathogenesis of Phlebitis (Le mécanisme pathogénique des phlébites) *Presse méd*, Par 1930, xxxviii, 436

The authors state that, with the exception of phlebitis from gout or endothelial dystrophy, all types of phlebitis are associated with the presence of bacteria which determine the gravity of the attack and the parietal lesion. By means of the lesion the bacteria bring about an importation into the blood of globu-

lins and fibrinogen which results in agglutination of the hæmatoblasts, sedimentation of the red blood cells, and the formation of a reticulum of fibrin favoring thrombosis. Stasis, a condition especially favoring metastatic phlebitis, may be added. Stasis and tissue fragility are present beyond question when the veins are varicose, but, though less apparent, they are present also during the lengthy prevaricose period, the stage of progressive venous insufficiency.

In certain families there is a hereditary dystrophic tendency which predisposes to phlebitis and varices. From such a predisposition, aggravated by neuroendocrine, static, toxic, or infectious disturbances, progressive venous insufficiency may develop and under the influence of static or anatomical disturbance in the circulatory return may lead to varices or, if toxic or infectious factors are added, to phlebitis.

FLORENCE A. CARPENTER

Labbe, Heitz, and Gilbert-Dreyfus. Arterial Obliterations of Venous Origin (Des oblitérations artérielles à point de départ veineux) *Presse méd*, Par, 1930, xxxviii, 217

In subjects who have suffered from a previous venous phlegmasia it is not exceptional for intermittent claudication in the same limb to become a serious ischæmic disturbance. This was the case in a woman aged sixty eight years who had two severe attacks of phlebitis followed after eight years by arteritis in the same limb necessitating amputation. The arteritis developed in two stages. Intermittent claudication appeared more than six months before the beginning of the ischæmic symptoms. It indicated the presence of arterial lesions causing a marked disturbance of the blood flow in certain arterial trunks of the leg. Since no examination was made at that time it was impossible to determine exactly when the arterial lesions began, but there is no doubt that they were consecutive not to say secondary, to lesions of the veins of the limb.

The second stage was characterized by the appearance at a higher level, i.e., in the femoral vessels, of an arterial thrombus which had very serious consequences. Histological examination after operation showed that a new inflammatory attack had occurred in the previously thrombosed femoral vein which had been rendered partially permeable by a process of canalization. There was doubtless a reactivation of an infectious process latent for years in the femoral vein at the level of the canal of Hunter. From this vein the inflammation reached the wall of the femoral artery by contiguity, a fact demonstrated by the leucocytic invasion of the external zone of the media. This invasion was probably the starting point of the endarteritic thickening, which the sections showed to be exactly opposite the phlebotic focus.

The authors cite also two other cases of arteritis in which the symptoms of ischaemia appeared in limbs in which the venous system had been previously attacked.

They believe that the more frequent use of oscillometry in the examination of arterial canals in limbs previously attacked by phlebitis would often reveal more or less delayed participation of the arteries of these limbs in a poorly extinguished inflammatory process. The practical interest of such findings is clear. The diagnosis of arteritis requires therapeutic measures which will prevent, or at least retard the development of serious symptoms.

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## BLOOD, TRANSFUSION

Morawitz, P. The Haemophilia Problem (Haemophilieproblem) *Therap. d. Gegenw.*, 1930, LVII, 2

The former definite characterization of haemophilia as a condition occurring only in males inherited only according to Löwen's law showing no demonstrable changes in the vessels and associated with a normal bleeding time and greatly delayed clotting can no longer be so rigidly maintained as it has been found that this tendency to bleed can be inherited also from males and appears in rudimentary form in women. In recent times there has been an increase in cases showing symptoms of haemophilia, but not presenting the classical picture. Apparently therefore transitional forms occur. As a rule the transitional cases show evidences of thrombopenia in addition to haemophilic symptoms viz a prolonged bleeding time and platelet deficiency with delayed coagulation. Delayed coagulation is without doubt of importance in haemophilia but is not to be considered the only pathogenic factor. It has often been shown how little the tendency to bleed depends on coagulability. This is evidenced by the immediate cessation of severe hemorrhage after blood transfusion when the coagulation time after the transfusion is somewhat longer than it was before. As haemophilia is an endogenous disease of certain mesenchymatous tissues it is not surprising that there are relationships between it and other endogenously produced mesenchymatous disturbances.

The author reports a case which presented features of haemophilia (slightly prolonged coagulation time) and thrombopenia (greatly increased bleeding time) but no diminution of the blood platelets and showed also very definite evidences of damaged vascular function such as is characteristic not of haemophilia but rather of thrombopenic and vascular purpura. Similar cases have been reported by von Willebrand under the designation pseudo haemophilia. The increasing number of such cases suggests that the classical haemophilia is only a special form of a larger endogenous syndrome.

Until recently the treatment of haemophilia was very unsatisfactory. However Weil claimed that the intramuscular injection of from 5 to 20 ccm of horse serum about once a month caused improve-

ment. Blood transfusion has only a temporary effect. Hop's vaccine has attracted notice. Hopius has not stated why he assumes a vitamin deficiency in haemophilia. In the cases of two brothers with haemophilia Nickau obtained good results from vaccine treatment over a period of months. As the delay of coagulation was not greatly changed it is to be assumed that the vaccine affected chiefly the supposed vascular components, the blood calcium rose, attaining the normal level.

The author's results with the vaccine treatment were neither uniform nor particularly convincing. In the first case, a case of so-called pseudo haemophilia, there was no effect whatever, the bleeding time, clotting time, and disturbed vascular reaction remained unchanged after several weeks of vaccination and several new hemorrhages occurred during the period of treatment. In the second case which presented the classical picture of haemophilia the clotting time was strikingly shortened and no hemorrhages occurred during the treatment. However the patient had been free from symptoms for intervals of months without treatment. Moreover in spite of long continued vaccination and in spite of an almost normal coagulation time, two small test incisions, one of which was made with a high frequency knife bled for longer than two weeks. This case therefore showed the contradiction between the tendency to bleed and determination of the coagulation time *in vitro*. In the third case an apparently typical case of haemophilia there was a moderate shortening of the coagulation time during the vaccine treatment but the tendency to bleed persisted (repeated skin hemorrhages). However, the extraction of several molars was done without causing marked hemorrhage.

Morawitz concludes that in future studies greater importance should be attached to the determination of calcium hunger for if an increase in calcium should prove to account for the occasionally observed good results improvement in the condition might be obtained with less costly methods than vaccination.

WORMAN (Z)

Koncalovskij, M. Blood Transfusion as a Therapeutic Procedure (Die Bluttransfusion als therapeutische Methode) *Proc. Delo*, 1929, XI, 303

Following a historical survey of the development of blood transfusion the author reviews the results obtained with this treatment in the Moscow Institute. In the latter institution a total of 530 transfusions have been given to 300 patients. Of 40 cases of anaemia secondary to acute hemorrhages, a good result was obtained in all. In cases of intermittent bleeding due to a hemorrhagic diathesis (4 cases of purpura, 7 of Werthof's disease, and 4 of haemophilia) symptomatic improvement was obtained. In a group of cases of hemotoxic forms of anaemia including 6 in which the condition was secondary to septic infection, 20 of carcinoma of the stomach or some other organ, 7 of leukaemia, and 6 in which the condition was secondary to benzine poisoning the

transfusion afforded symptomatic relief although it did not influence the primary etiological factor. Many cases of hæmolytic anæmia also responded well.

Eighteen cases of pernicious anæmia were treated. It was noteworthy that in some of these in which there was no response to a liver diet, improvement was apparent after blood transfusion, whereas in others both forms of therapy were necessary. In 3 cases of aplastic anæmia, blood transfusion was beneficial, in 1 case, the hæmoglohin rose from between 10 and 20 per cent to 40 per cent.

As transfusion seems without doubt to exert a favorable effect upon the nervous system, the psychic condition, and the general tone of the body, Bogdanov suggested that transfusion from many donors might increase the vitality of the organism (physiological collectivism). As yet, the limits of the therapeutic use of blood transfusion have not been definitely determined. The author believes that the most definite indications are presented by the acute anæmias of traumatic origin, cases requiring an

operation in which there will be considerable bleeding, and cases of hæmorrhagic diathesis. He regards it of value also in chronic anæmias.

Included in this article is the medical history of Bogdanov, who died from a blood transfusion. Bogdanov wished to render a student immune to tuberculosis by means of blood transfusion. Both men belonged to the fourth group, and 900 c. cm. of blood were exchanged. Marked hæmolysis followed. In the case of Bogdanov it led to icterus, enlargement of the liver, oliguria, hæmaturia, azotæmia with convulsions, heart failure, œdema of the lungs, and death. The student also developed hæmorrhagic icterus, enlargement of the liver and spleen, and nephritis, but, being in better physical condition, survived. Bogdanov's death was the only fatality that has occurred in the Moscow Institute. Its cause is not known. The amount of blood transfused could not have been responsible as on 5 previous occasions Bogdanov had exchanged equally large amounts for experimental purposes.

LEOPOLD HOLST (Z)

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Gallie W E, and Harris R J The Continuous Intravenous Administration of Physiological Salt Solution *Ann Surg*, 1930, 90, 422

The authors describe a simple apparatus for the administration of saline or glucose infusions over prolonged periods of time. As small an amount as 500 ccm per day may be given continuously. It is recommended that a vein on the back of the hand be used and that the needle be tied in. If necessary, a light splint may be employed. In one instance the needle was left in place for ten days. The vein should be about the same size as the needle. The authors make no attempt to keep the solution heated. The flow should be continuous. It is regulated by a screw pinch cock just above a dropper and glass capsule connection through which the rate of flow can be readily seen. Saline solution or Locke's or Ringer's solution are better and safer than glucose as glucose may irritate the vein and cause thrombosis even when it is used in a strength of less than 5 per cent. FRANK B BERRY M D

MacFee W F and Baldrige R R Postoperative Shock and Shock Like Conditions Treatment by Infusion in Large Volume *Ann Surg* 1930, 91, 329

The authors believe that one of the chief causes of shock is deoxygenation of the body tissues due to diminution of the volume of blood in circulation resulting from stagnation of the blood in the capillaries and the escape of plasma from the capillary channels. To increase the volume of the circulating blood they inject physiological salt solution, with or without glucose in amounts of from 2 000 to 8 000 ccm per twenty four hours. They state that the possibility of acute cardiac dilatation and pulmonary oedema should always be borne in mind and that the use of substances such as adrenalin to raise the arterial pressure without increasing the volume of blood is to be condemned. SAMUEL PERLOW M D

## ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Rice T B The Use of Bacteriophage Filtrates in the Treatment of Suppurative Conditions A Report of 300 Cases *Am J M Sc* 1930, 80, 345

Of the 300 cases reviewed the first 50 were treated with active strains of bacteriophage as determined by tests *in vitro* against autogenous cultures. In the others polyvalent stock preparations were used. The filtrate was a meat extract or meat infusion

peptone broth with a hydrogen ion concentration of pH 7.6 to 7.8 in which the bacteria had grown for from two to twenty four hours before partial or complete lysis was effected by the addition of active bacteriophage and which after twenty four hours, was passed through a Seitz or Berkefeld filter.

The beneficial results obtained from the use of such filtrates may have been due to one or more of the following possibilities: (1) the action of the bacteriophage as a lytic agent capable of destroying the offending organism in the manner described by d'Herelle; (2) an antiviral effect such as Bested's has described; (3) the effect of an extremely available antigen in the form of the dissolved bacterial bodies as suggested by Arnold and Weiss; (4) the induction of the offending organism into an avirulent phase as the result of microbial dissociation enforced by the presence of the bacteriophage, as pointed out by Hadley; and (5) the effect of the stimulation of the tissues by peptone broth, as described by Friedlander and Looney. The authors believe that stimulation of the tissues by peptone broth could not have been the sole factor as in none of the cases in which they employed peptone broth alone was the improvement very striking.

The conditions treated by the bacteriophage filtrates were boils, carbuncles, abscesses, staphylococcal cellulitis, staphylococcal purulent arthritis, appendiceal abscess, peritonitis, puerperal sepsis, local fistula, urinary fistula, cystitis, infected wounds, bed sores, leg ulcers, perineal lacerations, osteomyelitis, infected tuberculous lesions of bone, mastoidectomy wounds, running ears, sinusitis, staphylococcal septicæmia, impetigo, acne and streptococcal infections.

Excellent results were obtained in about 90 per cent of the cases, and except in a few instances the stock preparations were apparently as good as the specially prepared filtrates. ALTON OCHSNER, M D

Kling D H The Treatment of Gas Gangrene with Normal Horse Serum *Ann Surg* 1930, 91, 261

Kling reports four cases of severe gas gangrene which were treated with normal horse serum. The clinical observations in these cases suggested that the serum had a detoxicating effect.

In experiments on pigeons it was found that horse serum does not neutralize *Bacillus welchii* toxin; therefore it did not protect the pigeons against this toxin. Its action is based on unspecific destruction of the toxin.

Commercial brands of *Bacillus welchii* (perfingens) anti toxin were found to possess a high titer (600 ccm per 100 gm of body weight was sufficient to protect pigeons against a lethal dose of toxin). From

10 to 20 c cm of this serum, repeated according to the progress of the case, should therefore be effective against the toxæmia of gas gangrene caused by the bacillus welchii

SAMUEL KAHN, M D

### ANÆSTHESIA

Stabins, S J, and Morton, J J Observations on Spinal Anæsthesia *Ann Surg*, 1930, xc1, 242

From reports in the literature and from their own studies the authors conclude that spinal anæsthesia is especially useful for

1 Technical advantages, especially in gall bladder and pelvic operations, the treatment of non inflammatory conditions of the stomach and intestines and intestinal obstruction and operations for ventral hernia in obese persons

2 Major surgery in diabetes, as it causes no disturbance in the routine treatment and spares the kidneys and general metabolism

3 Major surgery of the extremities

4 Abdominal surgery in cases of active or arrested pulmonary tuberculosis without marked hypotension

5 The avoidance of postoperative discomfort especially nausea, vomiting, gas pains, and distention

6 The relief of paralytic ileus not associated with inflammation or mechanical block

They believe it should not be used in cases of marked sepsis, perforations of viscera, peritonitis or localized intra abdominal abscess, general cachexia with hypotension, marked hypertension, conditions which can be treated by simple procedures carried out equally well under novocain or epidural anæsthesia, and paralytic ileus associated with peritonitis

SAMUEL KAHN, M D

Pribram, B O Control of Avertin Anæsthesia with Thyroxin (Die Steuerungsmöglichkeit der Avertinnarkose durch Thyroxin) *Zentralbl f Chir*, 1929, p 3138

The future of avertin anæsthesia depends upon the development of a means of controlling it. Detoxication of avertin occurs in the liver and elimination of the drug occurs through the kidneys. In both processes there are marked variations depending upon tolerance. Essential for detoxication—the combining of the avertin with glucuronic acid to form a non toxic product—is the presence of glycogen in the liver. It has been demonstrated that tolerance is greatest and detoxication occurs most quickly in hyperthyroidism. A patient weighing 55 kgm, who received 21 gm of avertin (0.38 gm per kgm), was wide awake a few hours after the operation.

The thyroid gland may be a direct or only an indirect factor in the detoxication process. Increased rapidity of detoxication may be due to an increase in the general metabolism. Thyroxin seems to have a sugar mobilizing effect. Experiments on animals have been unsatisfactory, but in a large number of clinical cases the reviving effect of thyroxin has been surprising. In two cases in which prophylactic injections of thyroxin were given, it was impossible to induce a deep narcosis even with large doses of avertin.

The manner in which thyroxin exerts its effect has not been determined definitely, but clinical observation has demonstrated very clearly that thyroxin may be used to combat anæsthetic accidents threatening life. In asphyxia, protracted sleep, and unusually long somnolence, 2 or 3 c cm of thyroxin should be injected intravenously.

HELMUT SCHMIDT (Z)



# PHYSICO-CHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Tabern D L, Hansen N A, Volwiler E H and  
Grandall L A A Study of the Halogenated  
Oils Employed in Roentgenology *Radiology*  
1930 xiv 364

The authors discuss the chemical pharmacological and clinical effects of various types of halogenated oils used in roentgenological study. Experiments showed that brominized olive oil is the least irritating to the pericardium and pleura. Brominized olive oil esters though more irritating than the brominized olive oil are less irritating than the iodized oils commonly used. Brominized oils and esters in various combinations are more stable and less toxic than other halogenated oils. They do not cause iodism, and their viscosity is controllable.

CLARENCE V BATEMAN MD

Martin H E and Quimby E H Calculations of  
Tissue Dosage in Radiation Therapy *Am J*  
*Roentgenol* 1930 xviii 173

As their unit of measurement the authors use the "threshold erythema" dose a dose which in 50 per cent of the cases produces a faint reddening or bronzing of the skin in from ten to twenty days and in 20 per cent produces no visible effect.

Curves are used to show the percentages of surface irradiation delivered at various depths below the skin by four different types of surface irradiation. The tissue dose at a given depth is expressed in per cent of the skin erythema dose.

In measuring the dosage delivered by interstitial irradiation with buried gold seeds of radon the tumor mass is considered as a sphere the diameter of which is the largest dimension of the mass and the calculations are made as though the radon were concentrated in the center of the mass. The amount of irradiation in per cent of the skin erythema dose which is received by the periphery of the sphere is then calculated from a table which is included in the article.

Ten cases of neoplastic disease of the oral cavity and larynx in which the dimensions of the primary lesions and metastases and their distance from the skin portals were measured and the tissue dosage to the tumor was calculated in per cent of the skin erythema dose are presented in detail. In most of the cases the irradiation was given within a period of twenty days or less. The cases of transitional cell carcinoma received an average of 300 per cent of the skin erythema dose by external irradiation only, whereas the cases of adult squamous carcinoma received 1,000 per cent of the skin erythema dose or more by combined interstitial and external irradiation.

The authors conclude that it is possible to define the lethal irradiation dose of a specific neoplasm and that such knowledge should be of great value in the classification and treatment of neoplastic diseases.  
C D HAAGENSEN MD

Pohle E A, and Wright C S Studies of the  
Roentgen Erythema of the Human Skin III  
Macroscopic and Skin Capillary Changes  
After Combined Exposure to Roentgen Rays  
and Ultraviolet Rays *Radiology*, 1930 xiv 351

The authors report an extensive series of experiments which were carried out on white rats and human beings to determine the effects of ultraviolet irradiation on skin which had been treated with the roentgen rays. Both types of rays were carefully measured.

It was found that preceding ultraviolet irradiation enhanced the action of the roentgen rays and materially shortened the time of the healing process but that ultraviolet irradiation given on established roentgen ray lesions failed to increase the healing process.

The findings in the human skin were essentially the same as those in the white rats.

CLARENCE V BATEMAN MD

Turano L A Study of Roentgen Ray Erythema  
by Capillaroscopy (Lo studio capillaroscopico  
dell'eritema da raggi koentgen) *Radiol med*,  
1930 xvii 139

In his capillaroscopic study of the erythema caused by the roentgen rays the author noted alternate vasoconstrictions and vasodilatations with an irregular rhythm which persisted up to the tenth or twelfth day and were then followed by a paralytic dilatation which lasted up to about two months after the irradiation. At the end of that time the vessels showed a tendency to become normal.

Turano concludes that the time of beginning the frequency, and the duration of the alternate dilatations and contractions depend chiefly upon the constitution of the subject and the size of the dose. The early reaction is a manifestation of intense transitory irritability of the capillary walls. It is the first manifestation of beginning erythema and always precedes the macroscopic changes in the skin.

The course of the roentgen ray erythema seems to Turano to confirm the hypothesis that the capillaries have nerves of their own on which the rays act directly, giving them an independent motility. However, these nerves are correlated with the general vegetative nervous system.

AUDREY G MORGAN MD

May, E. A. Roentgen Therapy in Acute Inflammatory Conditions *Radiology*, 1930, xiv, 411

Ever since the advent of roentgen therapy, occasional reports have been made of a beneficial action of the rays on acute inflammatory conditions. However, there is a striking lack of uniformity in the data presented, and as the results were obtained with widely varying techniques, it is probable that many of them were accidental. To Heidenbain and Fried who used roentgen irradiation in over 1,500 cases of acute inflammatory conditions belongs the credit of placing this treatment of inflammation on a scientific basis.

May discusses the action of irradiation in some detail as regards its effect on bacteria and its effect on the tissues, citing his own findings and those of others. He reports the clinical results in a wide variety of conditions including furuncle, carbuncle, acute lymphadenitis, postoperative pneumonia, lymphangitis following paronychia, osteomyelitis, acute arthritis (especially arthritis of gonorrhoeal origin), erysipelas, and acute nephritis. Two hundred and thirty five cases treated by him are analyzed with

regard to the nature of the lesion and the results which were obtained. In 81.3 per cent of these, definite benefit was evident. The technique is described in detail. The following conclusions are drawn by the author:

In acute inflammatory conditions, roentgen treatment is of great help to surgery and also to more conservative therapy. It cannot replace the old methods, but is a very valuable adjunct to them. It not only alleviates pain, but also affects the entire process of inflammation. It should be undertaken only when surgical supervision is available.

The beneficial action is produced by local and general effects. The local effects are hyperæmia, dilatation of the blood vessels, increased circulation of the lymph, and an increase in other local immunizing processes. The general effect tends to increase the specific and non specific forces of resistance. The effect as a whole is not yet clearly understood.

The optimal dose of irradiation lies between 130 and 300 R units on the skin over the inflamed area with the use of heavy filtration and high voltage.

ADOLPH HARTUNG, M. D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Anderson C C Difficulties and Fallacies in the Radiological Diagnosis of Hydatid Infection *J College Surg Australasia* 1930, 11, 301

The diagnosis of hydatid infection is made difficult by the fact that in almost every part of the body in which hydatid cysts are demonstrable other diseases closely simulating hydatid infection in appearance may occur.

In the thorax hydatid disease can be diagnosed from the roentgenogram but sometimes this is very difficult. In lung or bone, the pericyst may be entirely absent and it is the nature of the pericyst which governs the roentgenological appearance. When this adventitia is very fine the outline is sharply defined but as it becomes thicker its clearness is decreased until it may appear to be irregular. It is the irregularity which makes difficult the differentiation between hydatid disease and carcinoma, sarcoma, lung abscess and dermoid.

In the case of the liver the conditions which must be differentiated from hydatid disease are malignancy, cirrhosis, abscess and simple diaphragmatic adhesions. A repeat examination after a few weeks is often of value as in a hydatid cyst there will be little change whereas in malignant disease there will be a definite change.

Tumors of the uterus and appendages are not liable to cause confusion unless they are calcified. The greatest difficulty arises from calcified ovarian cysts and calcified fibromyomata of the uterus. The serological manifestations of hydatid disease are not likely to be of value in the differentiation of these conditions because they are usually absent when aseptic death of the hydatid has occurred.

Hydatid cyst of the kidney has no diagnostic roentgen signs but should be suspected when a renal tumor presents a cystic appearance.

Peritoneal and mesenteric cysts are usually not demonstrable roentgenographically until the pericyst becomes calcified. After a barium meal the X ray may reveal a rounded margin outlined by the barium filled bowel. Peritoneal infection is usually secondary. In cases of abdominal injury followed by prolonged incapacity the history is suggestive of a ruptured hydatid cyst of the liver. The serological reaction is of great value except in cases of calcified tumors of the lower abdomen and pelvis in which a negative result does not differentiate a dead hydatid cyst from a calcified dermoid, ovarian cyst or uterine fibroid.

Peritoneal inflation is not advisable as a diagnostic procedure. Claessen states there has been no case reported in which pneumoperitoneum made the

diagnosis possible after all other methods had failed.

The skeletal tissues are affected only infrequently. As the adventitia is usually absent in bone a multilocular burrowing growth results which erodes and destroys the bone without giving any definite indication of its nature. Devel has shown that there are present on the outer covering of the cyst numerous osteoclasts which destroy the bone as the cyst develops. There is no periosteal reaction until the cortical layer has been penetrated. When the cyst finally extends to the soft parts, the fibrous capsule develops in the normal way. Hydatid cysts must be differentiated from endosteal sarcoma, enchondroma and secondary sarcomatous or carcinomatous deposits all of which are associated with lack of an osteitic reaction at the edge of the area of rarefaction. When there is a multilocular burrowing growth the cyst can be differentiated from echinococcus alveolaris only by biopsy. Negative serological reactions are not of much value. Fracture may lead to a diagnosis of osteosarcoma or osteitis fibrosa cystica or when associated with suppuration, to a diagnosis of tuberculous abscess. Calcification in a child is more likely to indicate a tuberculous lesion since calcification of the adventitia is a sign of degeneration and is not expected before the third or fourth decade of life. The roentgen diagnosis of hydatid infection of bone is easy only in infection of a long bone with areas of increased radiotranslucency extending the length of the shaft. In all other instances the roentgenogram can be interpreted only with difficulty. E. S. PLATT, M.D.

Scala, G., and Ciminnata, A. Gangrene of the Extremities (Le gangrene delle estremità) *Arch ital di chir* 1930 XLII, 746 752 774

SCALA reviews the different forms of gangrene of the extremities, chief among which are juvenile endarteritis or juvenile gangrene, obliterating thromboendangitis or Buerger's disease, intermittent claudication of the Charcot type, arteriosclerotic gangrene, and senile gangrene with its two subvarieties, the diabetic and the syphilitic.

All of these occur more frequently in males than in females and are more common in the lower limbs than the upper limbs. At least at first they are unilateral.

Endarteritis is related to arteriosclerosis. It has its origin in a lipid infiltration of the deep layer of the intima which is one of the most important stimuli for the characteristic hyperplasia of the connective tissue of the intima. With the hyperplasia there are compensatory phenomena such as a decrease in the cardiovascular tension and hypoplasia of the media.

In all forms of gangrene there is a neurovegetative disequilibrium. This component is most marked in juvenile gangrene. In the forms seen in later years it gives place to an angiopathic component. With this change there is a progressive change from lesions of the intima to lesions of the media which are chiefly degenerative in character because of the predominant angiopathic component. These characteristics establish a relationship between these gangrenes and the vasomotor trophic neuroses, but in the latter the disturbance is chiefly, if not wholly, neurovegetative. The neurovegetative disequilibrium is due to defective development and functional arrhythmia of both the sympathetic and parasympathetic systems. These forms of gangrene are more common in the lower limbs than in the upper limbs because the lower limbs are less highly developed than the upper limbs.

There is a constitutional factor in these gangrenes that is more marked in the juvenile forms than in the arteriosclerotic, diabetic, and syphilitic forms. Associated with the constitutional factor there are anomalies in the endocrine glands, chiefly those of the ectodermal group, such as the thyroid, hypophysis, and suprarenal capsules, but sometimes also in the genital glands. In the presence of predisposing factors, the immediate cause of gangrene may be an external injury such as trauma, exertion, toxins such as alcohol, lead, and mercury, abnormal products of metabolism, acute and chronic infections, and cold.

CRIMINATA discusses various surgical methods of treating gangrene. He states that some surgeons have reported excellent and even permanent results from periarterial sympathectomy of the femoral artery, whereas others have had no success from this procedure. The difference he attributes to the stage of the disease at which the operation was performed. Periarterial sympathectomy is not entirely free from danger as numerous cases in which it was followed by primary or secondary hæmorrhage, postoperative thrombosis, or aneurismal hæmatoma have been reported.

Embolectomy has been performed in 216 cases of gangrene of the extremities, 145 of which have been reported in the Scandinavian literature. The success of this operation depends largely on the time at which it is performed. The best results are obtained in cases operated upon during the first ten hours. If the diagnosis is made early and the operation is performed at once the patient's life may be saved.

On the theory that the gangrene is caused by hyperfunction of the suprarenals, left suprarenalectomy has been performed in a number of cases. Of 115 cases in which this operation was done by Oppel, it relieved the cyanosis and pain in 15. In 50, a secondary amputation was necessary. Of 62 cases treated by suprarenalectomy by other Russian surgeons, the pain stopped temporarily in 21 and for at least a year in 14. In 20 it was not affected. In 9, the ulcer became healed and the gangrene demarcated. These were all cases in which the pain stopped

In 5 cases there was suppuration of the bed of the suprarenal. The mortality was 11 per cent.

Resection of the lumbosacral sympathetic and root section has been tried in about 20 cases, but this number is not sufficient for definite conclusions. Theoretically operation on the lumbosacral ganglia should suppress vasoconstrictor impulses and if the humoral endocrine and other factors controlling vessel tonus are normal, the operation should improve the local circulation. However, if the latter also exercise a vasoconstrictor action, suppression of the nerve impulses will not help the condition. This may explain the negative results in some cases.

Arteriovenous anastomosis has not given satisfactory results and has a high mortality.

Some surgeons have reported good results from ligation of the veins, whereas others have failed to relieve the condition by this procedure. It is believed by some that periarterial sympathectomy gives the best results when it is accompanied by ligation of the vein.

When conservative methods fail, amputation must be performed. The site at which it should be done is determined by the arterial pulsation, oscillography, the Moskowitz test, roentgen examination, capillaroscopy, and the vasomotor test. None of these methods alone is sufficient. As a rule an economical amputation may be performed first and if this proves insufficient a high amputation may be performed later. The second operation should be performed under spinal anaesthesia in order to prevent the shock of two etherizations.

In the discussion of these reports, DONATI said that the term "spontaneous gangrene" should be applied only to gangrene of unknown cause. Early diagnosis is important. The earlier operation is performed the greater the chances of success. The operation should be as conservative as possible.

FRUGONI called attention to the muscle atrophy which sometimes occurs early. He stated that this is not of neuritic origin but is a myopathic dystrophy, it may appear before there are any changes in the color or temperature of the limb and may lead to a mistaken diagnosis of neuritis if attention is not given to the vessels. Among the complications are a muscle contraction analogous to Volkmann's contracture and a multiple and migrating phlebitis which is generally apyretic, entirely or nearly painless, and associated with slight inflammation and rosary like nodules, which may become absorbed spontaneously. The migrating polyphlebitis shows the systemic character of Buerger's disease which is differentiated from juvenile arteritis by its more systemic character and possible regression of the symptoms as the result of the canalization of thrombi, also, in some cases, by the histological characteristics.

PACE called attention to the value of oscillography in the diagnosis of arterial occlusion and to a new method proposed by Aldrich and McClure for the differentiation of spasmodic forms from true obliterating forms. He discussed his study of the physio-

ological effects of periartral sympathectomy, calling attention to the reaction to contralateral vasomotor pressure and the functional signs to be deduced from a study of pressure after sympathectomy.

PONTANO criticized the operation of suprarenal ectomy, stating that neither scientific considerations nor practical results justify its performance.

VOLTERRA reviewed the work on pericapillary cells. He believes that such cells exist, but that they are not contractile cells.

VANZETTI rejected Scala's theory that endarteritis is a form of arteriosclerosis. He stated that in the former condition there are no degenerative phenomena whereas in the latter condition the essential feature is degeneration. The type of proliferation of the intima is also different. In obliterating endarteritis the veins are also involved whereas in arteriosclerosis they are not. It is difficult to state exactly the relation between obliterating endarteritis and Buerger's disease. Histological pictures in some cases of endarteritis obliterans are certainly very much like those of Buerger's disease. A histological study of early stages of the two diseases will probably clear up the question.

SCALONE said that suprarenal ectomy is of very little value in gangrene. Periartral sympathectomy cannot do much good in advanced cases but in the pregangrenous period it is of value to bring about peripheral vasodilatation, active hyperemia and warmth of the extremity. Scalone has demonstrated that ligation of the vein affects the blood pressure at the periphery, contrary to the statement of Bianchi and Biolato.

ROVATI stated that electrical stimulation of the lumbar sympathetic chain has a strong influence on arterial pressure. However, the increase does not differ from that produced by stimulation of a peripheral spinal nerve. It is therefore due to a reflex action of the vasomotor center to the pain stimulus. Accordingly the experiments do not prove a direct influence of the lumbar sympathetic on arterial pressure in the lower limb.

ALESSANDRI emphasized that the most important factors in the treatment of gangrene are early diagnosis and operation. In the diagnosis, biopsy of a vein of the affected limb and arteriography are of great aid.

LUNDELL said that some importance had been attributed to the spastic atonic syndrome in gangrene but that this is seen in various diseases and some times in perfectly normal persons. He thinks that the capillary changes are only predisposing factors and not true causes of the disease. The pain is due to venous congestion and the liberation of substances similar to histamin that cause vasodilatation.

ARESU stated that he does not differentiate between arteriosclerosis and senile involution of the artery particularly when the process runs an obliterating course. He thinks the arteriosclerotic lesions which cause diabetic gangrene are a special type of arteriosclerosis which differs from the ordinary type in being more obliterating, evidently by a special

characteristics of the lipoids in these subjects due to the high degree of lipemia in this disease.

SCALA said that he had not intended to say that endarteritis is a form of arteriosclerosis but only that there are physiological links between the two conditions.

CINQUATA stated that in his opinion the skepticism of his colleagues with regard to conservative operation in gangrene is not entirely justified. Conservative operation is of course of no value in the advanced stages but may be effective if it is performed early. Suprarenal ectomy is not dangerous and has a low mortality if performed with proper technique. Resection of the lumbar sympathetic ganglia has given good results but its mortality is higher than that of suprarenal ectomy. Ligation of the vein deserves a trial. **ANDREW G. MORGAN, M.D.**

**Berard and Peycelon: Connective Tissue Tumors of the Limbs. Remote Results and New Observations. (A propos des conjonctomes des membres. Résultats éloignés et observations nouvelles.)** *Lyon chir.* 1930, xxvii, 83.

The first case reported was that of a girl thirteen years of age who discovered a painless tumor on the right buttock in August 1926. The neoplasm grew to the size of a fist. Operation was performed in January, 1927. The microscopic diagnosis was "round cell sarcoma." One month later there was a recurrence. An extensive excision was then done. The tumor was a polymorphous sarcoma consisting of small elements of varied aspect, but ordinarily round, organized in islets separated from each other by thin strips of connective tissue. As there were numerous adipose elements it was of the type described as "liposarcoma." Eight days after the operation the patient was given treatment by irradiation. When she was re-examined three years later she was found to be entirely cured. Although the buttock muscles were largely sacrificed, all movements of the thigh were normal and no difficulty was experienced in walking or in standing for some time.

The authors report also a reticulosarcoma of the right forearm of an infant aged six months and a probably telangiectatic tumor of the antero external part of the root of the thigh of a woman fifty five years of age.

In the last three years they have treated eighteen patients with connective tissue tumors. Nine are now dead. Six of the eighteen had already been treated surgically or with physical agents and were referred for treatment of a recurrence. Of these six patients, two who were treated by surgery supplemented by irradiation are still living. Of five others who were treated by surgery and irradiation, four are still alive. Also surviving is one who was treated by surgery alone in March, 1928. Two patients treated by irradiation alone are dead. One patient who was treated by surgery and both radium and irradiation died after surviving the first four years. Two other patients arrived that did not justify treatment.

Amputation should be done when the essential parts of the limb are compromised. When a conservative operation is performed it should be supplemented by deep radiotherapy. Recurrences may develop after years. Contrary to the irradiation technique recommended for epitheliomata, multiple-treatments should be given over a period of several weeks with doses calculated to conserve the vitality of the integuments. The radioresistance of connective neoplasms does not increase with the number and duration of the irradiations. Applications given thirty six or more months after the first application seemed as efficacious as the first application.

In the discussion, CHALIER reported a good result of conservative surgery combined with X-ray irradiation in a case of connective tissue tumor of the limb.

PACE

Horning, E. S., and Richardson, K. C. Cytological Differences Between Normal and Malignant Tissues. *Med J Australia*, 1930, 1 238

In their discussion of various human and rodent neoplasms, the authors include the occurrence and behavior of the Golgi apparatus, mitochondria, melanosis, and chromidial extrusions. An interpretation of the phenomenon of chromidial extrusion from the point of view of the hypotheses of Popoff is suggested. The authors believe that several atypical phenomena in neoplastic cells may be partially accounted for by recent observations on the function of mitochondria and their behavior in cells undergoing cytotoxicity. The various theories regarding melanin formation are cited briefly and evidence in favor of the mitochondrial origin is presented.

Nuclear behavior in neoplastic cells is contrasted with the normal processes in healthy cells. Sarcoma and carcinoma cells are described in detail with particular attention to these nuclear phenomena. Recent observations on the behavior of the nucleolus in normal and neoplastic cells are discussed.

The phenomenon of amitosis so typical of neoplastic cells, is correlated with the same process occurring in cells undergoing cytotoxicity *in vitro* in an unchanged medium. It is suggested that the degenerating cell liberates a substance which gives rise to asymmetrical division, and that the extensive necrotic areas so frequently observed in neoplastic tissues liberate a similar substance which brings about amitosis in the tumor cells.

In sarcomata, evidence of a gradual process of cellular differentiation from the normal stromal elements to the highly specialized sarcoma cells has been noted. An interpretation of the part played by chemotactic principles in this phenomenon is suggested. Recent new observations on the behavior of sarcomata *in vitro* are cited in support of the theories of cell differentiation.

The more important physiological differences between normal and malignant cells cultivated *in vitro* are discussed, and the evidence of the existence of a growth promoting principle in neoplastic cells is summarized briefly.

The article contains excellent photomicrographs  
JOHN J. MALONEY, M.D.

Weber, F. P., Schwarz, E., and Hellenschmied, R. Spontaneous Inoculation of Melanotic Sarcoma from Mother to Fetus. *Brit M J*, 1930, 1, 537

The authors report what they believe to be the first recorded case of transmission of a malignant neoplasm from mother to child by spontaneous inoculation. A woman known to have a melanotic sarcoma was delivered by caesarean section, three months before her death, of a child who at first appeared to be healthy. At the time of operation the lower uterine segment was occupied by a huge black placenta, which proved to be infiltrated with masses of melanotic growth. When the child was eight months old, it was admitted to the hospital with an enlarged liver on which bosses suggesting a malignant neoplasm could be distinguished by palpation. Following increasing cachexia, the child died at the age of ten months and one week. Shortly before its death minute nodules developed beneath the skin.

At autopsy, the bosses which had been felt in the liver were found to be melanotic tumors. The size of the growths suggested that the primary infection was in the liver, but there were many infiltrated lymphatic glands in the abdomen and minute metastases in the lungs and the subcutaneous tissue. Palpation during life and examination after death indicated that the growth of the neoplasm in the liver had been rather circumscribed and slow as if there was considerable resistance on the part of the child's tissues. The tumor cells from which the growths in the child's liver had developed had evidently been carried to the hepatic capillaries by way of the blood stream in the umbilical vein from the placenta, which is known to have been melanomatous.

JACOB M. MORA, M.D.

#### GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

Gusnar, K. von, and Globig, H. An Unusual Form of Sepsis (Über eine besondere Form der Sepsis). *Deutsche Zeitschr f. Chir.*, 19, 9, 667, 1903

In 1916 Bogdan reported several cases of sepsis with an unusual course which was due to the small narrow, gram negative anaerobic bacillus described by Budav and in most instances was fatal. Only thirty four such cases have been seen in Hungary. The authors report the following case.

A man fifty one years old was thrown from an automobile and sustained a bruise on the face. Three days after the accident the site of the injury was swollen and red and a high fever had developed. On the following day the patient was sent to the hospital. He gave a history of having been hospitalized five years previously for an exudative pleurisy.

The wound in the face was enlarged and an abscess opened. The temperature promptly dropped, but

four days later suddenly rose to 39.0 degrees C. After the rise there was an irregular intermittent fever. Fourteen days later a sterile exudate was obtained from the right chest and roentgen examination showed bilateral apical tuberculosis. Four days later the patient complained of pain throughout the body which was most marked in the region of the liver and right shoulder. Six days after the first thoracotomy, 400 c. cm. of mucopurulent exudate were removed from the right chest. Cultures of this exudate revealed the bacillus of Buday. The patient died four weeks after his admission to the hospital.

Autopsy disclosed an old fracture of the nose, putrefactive bronchopneumonia and areas of gangrene in both lungs, phlebitis of a branch of a pulmonary vein coming from an area of gangrene, multiple liver abscesses, phlebitis of a hepatic vein, and septic thrombosis and arteritis of a branch of the pulmonary artery, multiple abscesses in the psoas muscles, pyoarthrosis of the right hip joint, an old productive tuberculosis of both apices, slight hypertrophy of the prostate and trabeculation of the bladder.

With the exception of chills there were present in this case all of the symptoms previously observed in this type of sepsis—systemic infection, irregular fever, multiple liver abscesses, pleural empyema, foci of gangrene in the lungs, and purulent arthritis.

The condition can be differentiated from the usual type of septicæmia by the clinical picture as well as the bacterial findings.

The prognosis is unfavorable. The best results are obtained from the early use of serum therapy.

The authors emphasize the importance of considering the presence of anaerobes in all cases of sepsis.  
COLMERS (Z)

#### DUCTLESS GLANDS

Madruzzo G. An Experimental Study of the Relationship between the Thymus and the Genitalia (Contributo sperimentale alle correlazioni tra timo e genitali). *Riv. ital. di ginec.* 1929, x, 641.

The author reports experiments which showed that the relationship between the thymus and sex glands is one of antagonism. This was manifested by hyperplasia of the thymus after castration, reduction in its size after so called stimulating irradiation of the ovaries, retardation of the sexual development of animals treated with thymus, hypertrophy and hyperplasia of the thymus in the pre-pubescent period, and regression of the thymus at puberty and during pregnancy.

An antagonism between the thymus and the uterus was shown by retardation of atrophy of the genitals when exaggerated function of the thymus was suppressed by irradiation.

These observations are of importance because they suggest that irradiation of the thymus might be of value to combat the effect of removal of the sex glands. The uterus influences the thymus only through the sex glands. AUDREY G. MORGAN, M.D.

# BIBLIOGRAPHY of CURRENT LITERATURE

NOTE—THE BOLD FACE FIGURES IN BRACKETS AT THE RIGHT OF A REFERENCE INDICATE THE PAGE OF THIS ISSUE ON WHICH AN ABSTRACT OF THE ARTICLE REFERRED TO MAY BE FOUND

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## SURGERY OF THE BONES JOINTS, MUSCLES, TENDONS

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# INTERNATIONAL ABSTRACT OF SURGERY

OCTOBER, 1930

## LANDMARKS IN SURGICAL PROGRESS

By IRVING S. CUTTER, M.D., Sc.D., CHICAGO  
Dean Northwestern Medical School

### JOSEPH CONSTANTINE CARPUE AND THE REVIVAL OF RHINOPLASTY

ÉSTIENNE GOURMELENUS<sup>1</sup> (died 1593) quotes a letter written by Elysus Calentius,<sup>2</sup> a fifteenth century Neapolitan poet, to a friend who had suffered the loss of his nose, adjuring him to come to Naples with a view of submitting his case to a famous plastic surgeon, one Branca Calentius says

If you would have your nose restored, come to me. Truly, the thing is wonderful. Branca, a Sicilian, a man of great abilities, has learned the art of restoring a nose either by supplying it from the arm of the patient, or by infusing upon the part the nose of a slave. Having seen this, I determined on writing to you, to whom no news can be more interesting. Be assured, that if you come, you may go home again with as much nose as you please.

There appear various scattered records of the Sicilian family of Branca and of the unusual success of this family in supplying deficiencies of ears, noses, and lips. The earliest reference to Branca appears in a manuscript in the year 1442. Branca is said to have lived at Catanea



JOSEPH CONSTANTINE CARPIE  
1764-1848

and is referred to as a "celebrated surgeon in restoring ears, lips and noses."

Alessandro Benedetti (1460-1525) who succeeded Gabriele Zerbi (1468-1505) as Professor of Anatomy at Padua, and who founded the anatomical theatre there in 1490, says<sup>3</sup>

Skilful persons have taught us how to rectify deformities of the nose. Portions of flesh, cut from the arm of the patient, formed into the shape of nostrils, and added to the trunk of the nose are very commonly seen. They dissect the upper skin of the arm with a razor, and, then, paring off the remaining edges of the nos-

trils, or, if necessary, cutting them away, they bind the arm to the head, in order that wound may adhere to wound. After this, the wounds having conglutinated, they take away from the arm, with the knife, as much as is wanted for the restoration of the nose, for the kindred vessels of the nose nourish the flesh which is newly acquired, while hairs sometimes grow on the skin, because of its origin on the arm.

This same method is noted by Gabriel Fallopius (1523-1562) in his *De Decoratione*, and Ambrose

<sup>1</sup> *Chirurgiae Artis* Paris 1580

<sup>2</sup> Contemporary with Sannazarius and Pontanus. Born at Amphractus in Apulia. Died 1503.

<sup>3</sup> *Anatomiae* Venice 1497

Pare (1510-1590), in discussing the restoration of a nose, says<sup>1</sup>

There was a Surgeon of Italie of late years which would restore or repair the portion of the nose that was cut away after this manner. Hee first scarified the callous edges of the maimed nose round about, as is usually don in the cure of hare-lips, then he made a gash or cavitie in the muscle of the arm which is called *Biceps*, as large as the greatness of the portion of the nose which was cut away did require and into that gash or cavitie so made hee would put that part of the nose so wounded and binde the patient's head to his arm, as if it were to a post so fast that it might remain firm stable and immoveable and not lean or bow anie way and about fortie daies after or at that time when hee judged the flesh of the nose was perfectly agglutinated with the flesh of the arm, hee cut out as much of the flesh of the arm, cleaving fast unto the nose as was sufficient to supplie the defect of that which was lost and then hee would make it even and bring it as by licking to the fashion and form of a nose as near as art would permit and in the mean while hee did feed his patient with panadoes, gellies and all such things as were easie to bee swallowed and digested. And hee did this work of curing the place where the flesh was so cut out onely with certain balms and agglutinate liquors. A younger brother of the familie of St. Thoan being wearie of a silver nose which being artificially made hee had worn in the place of his nose that was cut off went to this Chirurgian into Italie and by the mean fore named practice hee recovered a nose of flesh again to the great admiration of all those that knew him before. This thing truly is possible to bee don but it is verie difficult both to the patient suffering and also to the Chirurgian working. For that the flesh that is taken out of the arm is not of the like temperature as the flesh of the nose is also the holes of the restored nose cannot bee made as they were before.

It is evident that Pare failed to grasp the significance of a skin graft and would have the reader understand that the reconstruction was accomplished through borrowing flesh of the arm, or perhaps Pare cited the operation only to make it appear ridiculous. Nevertheless Pare who believed in the existence of all sorts of monsters could hardly have doubted the authenticity of even so bizarre a surgical procedure. Vesalius (1514-1564) in his *Chirurgia Magna* describes imperfectly the operation of supplying deficient parts of the nose from the arm.

It remained, however for Gaspar Taliacozzo, familiarly known as Taliacotus (1546-1599),

Professor of Anatomy at Bologna, to describe the Branca method of nose restoration in a careful and well nigh modern spirit in his work published in Venice in folio in 1597, *De Curatorum Chirurgia per Insitionem, Libro duo, additis Cutis Traducis, Instrumentorum omnium, alque Deligationum, Iconibus et Tabulis* Garrison says<sup>2</sup>

For this innovation Tagliacozzi was roundly abused by both Pare and Fallopius and satirized during the following century in Butler's *Hudibras*<sup>3</sup> while the ecclesiastics of his own time, we are told were fain to regard such operations as meddling with the handiwork of God. Tagliacozzi's remains were exhumed from the convent, where they reposed, to be buried in unconsecrated ground and in 1788 the Paris Faculty interdicted face repairing altogether.

Taliacozzi's work is composed of two books, the first containing twenty five chapters and the second twenty. The first ten chapters contain references to Homer, St. Augustine, Orus Apollo, Cato, Euripides, Plato, Horace, Quintilian, Tertullian, Aristotle, the Book of Genesis, and many other authors and sources. He apparently felt it necessary first to establish the dignity of the face as set forth by poets, philosophers, and physicians. Beginning with the eleventh chapter of Book 1, he discusses the theory of plastic surgery, particularly of the nose. In the twelfth chapter he states that the principle of the operation is derived from the cultivation of trees, as grafts or buds are inoculated into stocks, so in animals, one part may be ingrafted upon another. In vegetable grafting or inoculation, he notes that the stock must be cloven, or the bark perforated, so must that of the animal be wounded upon which the extraneous part is to be ingrafted. In the thirteenth and fourteenth chapters, he discusses the various types of skin (of which he names four). In the fifteenth and sixteenth chapters directions are given for the quantity of skin to be taken and the manner in which the parts are kept together until healing takes place. He notes that after the skin has been cut from the arm it sometimes shrinks even a fourth part, both in length and breadth. He directs the surgeon to employ his discretion in this particular, and to take too much skin rather than too little. The parts are to be united by interrupted sutures. In the twentieth, twenty first, and twenty second chapters, he defends the operation.

<sup>1</sup>The Works of that famous Chirurgion Ambrose Parey Translated out of Latine and compared with the French by Tho. Johnson London 1634 Book XIII Chapter 2 p. 378

<sup>2</sup>Venice 1599

<sup>3</sup>History of Medicine Fielding H. Garrison Philadelphia 1924

<sup>4</sup>An English political poem by Samuel Butler (1612-1633) of more than 10,000 verses designed to show the vileness and folly of the anti-royalist party

against the charge of cruelty. In the second book, Talmacozi describes the operation in detail, noting the instruments and the apparatus required.

Subsequent to the death of Talmacozi commentaries on his method were published by various writers. Among these may be mentioned Thomas Fienus (1567-1631) in 1602, Fabricius Hildanus (1560-1634), and John Baptist Cortesi (1554-1636), who succeeded Talmacozi at Bologna and who republished his method claiming to have performed it.<sup>1</sup> Apparently, however, productive interest in the method of Talmacozi died with him and little effort was made to carry it into actual practice, although many writers mentioned the method without approving it. John Hunter evidently had not read Talmacozi with care, else he would not have said "the attempt to unite parts of *two different bodies* has only been recommended by Talmacozi."<sup>2</sup>

In the meantime the cure of wounds by "sympathy" had been strongly advocated by John Baptist Van Helmont (1578-1644) and Robert Fludd (1574-1637). The latter in his *Defense of Wound-Salts* (1635) relates with great éclat, and, as he says, from unexceptionable authority, the history of a certain nobleman who had had a lost nose restored from the arm of a slave. Fludd says

The slave, being rewarded and set free went to Naples, where he fell sick and died, immediately on which a gangrene appeared on the Nobleman's nose. Upon this, that part of the nose, which belonged to the dead man's arm, was by the advice of his physicians cut off, and, being encouraged by the success of the previous experiment, he was now prevailed upon to have his own arm wounded in like manner, and to apply it to the remainder of his nose which he did and a new nose was cut off of his own arm which continued with him till death.

The so called Hindu method of rhinoplasty was brought to the attention of the English public by an account published in the *Gentleman's Magazine* in 1794. A correspondent who signs himself "B. L.," writing under the caption "A Curious Surgical Operation," says<sup>3</sup>

Cowasjee a Mahratta of the caste of husbandman, was a bullock driver with the English army in the war of 1792, and was made a prisoner by Tippoo, who cut off his nose and one of his hands. In this state he joined the Bombay army near Seringapatam, and is now a pensioner of the Honourable



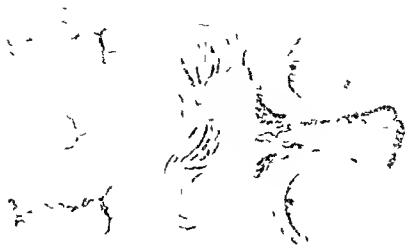
Plate from *Gentleman's Magazine* 1794

East India Company. For above 12 months he remained without a nose, when he had a new one put on by a man of the Brickmaker caste, near Poonah. This operation is not uncommon in India, and has been practised from time immemorial. Two of the medical gentlemen, Mr Thomas Cruso and Mr James Irindlay, of the Bombay presidency, have seen it performed, as follows. A thin plate of wax is fitted to the stump of the nose, so as to make a nose of good appearance. It is then flattened, and laid on the forehead. A line is drawn round the wax, and the operator then dissects off as much skin as it covered leaving undivided a small slip between the eyes. This slip preserves the circulation till union has taken place between the new and old parts. The cicatrix of the stump of the nose is next pared off, and immediately behind this raw part an incision is made through the skin, which passes around both

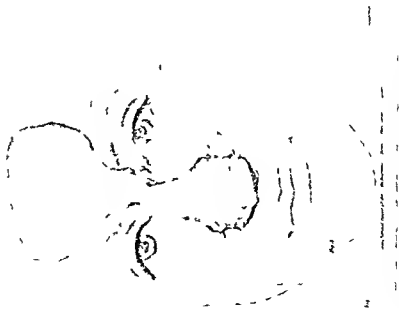
<sup>1</sup> *Miscellaneorum Medicinalium* Veniz 1615

<sup>2</sup> *Treatise on Blood* etc. John Hunter London 1794

<sup>3</sup> *The Gentleman's Magazine* 1794 LXXV Pt 2 No 4 October



Engraving from Carpus showing front and lateral views of healed flap in Case 1



Engraving from Carpus showing first stage of rhinoplasty plastic flap in Case 1



In this case there appeared to be more hæmorrhage and more inflammation, with the result that healing of the graft was longer delayed. At a second operation a longitudinal incision along the top of the nose enabled the operator to join carefully together the new flap with the remaining portion of the nose proper.

The two cases of Carpué deserve recognition inasmuch as they antedate the published operations of Karl Ferdinand von Græfe (1787-1840) who introduced rhinoplasty in 1818. Carpué's contribution should further be recognized as the first successful demonstration in British surgery of the application of the forehead flap method.

Joseph Constantine Carpué was born in London May 4, 1764. He was originally intended for the priesthood, but rebelled against this line of endeavor and after many vicissitudes decided to study surgery, which he did at St. George's Hospital. Shortly after graduation he was appointed surgeon to the Duke of York's Hospital at Chelsea. He was distinguished as an anatomical teacher. For many years he lectured to large classes illustrating his talks with chalk drawings. His teaching period covered more

than thirty years of his life. Among his contributions should be mentioned his studies in medical electricity in which he was a pioneer. He was a member of the Royal Society and of the Royal College of Surgeons. J. F. South mentions him in a deprecating manner, concluding his account with

I remember him, a tall, ungainly good tempered grey haired man in an unfitted black dress and his neck swathed in an enormous white kerchief very nearly approximating to a jack towel.<sup>1</sup>

In these days of the wide use and unusual perfections of the methods of plastic surgery, it is interesting to recall the well nigh contemptuous regard of the leading British surgeons of the day of Carpué's efforts at rhinoplasty. The results in his cases, no doubt faithfully delineated by Charles Turner, mark Carpué as an original investigator who was willing to try a new surgical procedure based upon sound physiological reasoning. In his narrative he repeatedly acknowledged his indebtedness to Thompson's work on inflammations. He died in 1846, in his eighty second year.

<sup>1</sup>Lancet 1846 I 566 568. Feltow's Memorials of J. F. South 1884 p. 102.

# ABSTRACTS OF CURRENT LITERATURE

## SURGERY OF THE HEAD AND NECK

### HEAD

Billington, W., and Round, H. Bone Grafting the Mandible *Proc Roy Soc Med Lond*, 1930, *viii*, 653

The experience gained in the successful treatment of seventy five cases of compound fracture of the mandible due to war wounds by means of bone grafting is applied by the authors to the treatment of cases in civil practice

After the patient has been free from the possibility of sepsis for a number of months and all septic teeth, stumps, and fixation apparatus have been removed, the bone grafting operation is performed in the following manner

A curved incision is made over the site in the jaw to be grafted, and the area exposed well to either side and posteriorly. Care is taken to avoid opening into the mouth, for if this is done the operation must be postponed until the wound has completely healed. The bed for the bone graft is prepared by removing a flake of bone from the outer surface of each fragment for 1 in. away from the gap. A portion of the crest of the ilium is then removed from the same side as the operation for the bone graft. Rib bone is not used as it is too soft and does not develop strength equal to that of the mandible. Tibial bone is too brittle, cannot be easily bevelled and shaped to fit the gap, and is apt to undergo necrosis and separate. After the bone gap has been properly prepared, the graft is introduced into it, but no attempt is made to secure fixation as this has been found to lead to failure. The soft tissues are then sewed over with chromicized catgut.

From three to four weeks after the wound has completely healed, correction and retention of the fragments in the required position are obtained by the use of articulating splints such as silver cap splints adapted and cemented to teeth and supplemented by vulcanite extensions.

The authors report three cases in which repair of gaps of the jaw was done successfully by the method described.

The first case was that of a boy eight years of age who had a portion of the left side of the body of the mandible removed on account of sarcoma. The bone graft was inserted six months later. The second case was that of a man aged fifty one who had had a gap in the mandible for forty years as the result of an operation for sarcoma. In the third case, that of a man aged thirty three years, a bone graft was placed on each side of the body of the mandible.

RUDOLPH S. REICH, M.D.

### EYE

Fisher, J. H. Perforating Wounds of the Eyeball *Lancet*, 1930, *ccviii*, 787

For the removal of foreign bodies located behind the lens, the author prefers the posterior route. He describes his method of introducing scleral sutures before incising the tissue preparatory to the extraction of a foreign body with a magnet or forceps. His objection to the older methods of localization led him in 1916 to advocate a more accurate procedure which he describes in detail with illustrations and illustrative case reports. VIRGIL WELSCOTT, M.D.

Swab, C. M. The Histological Background of the Ocular Syndrome in Botulism *Arch Ophthalmol*, 1930, *iii*, 437

In experiments with the toxin of clostridium botulinum which were carried out on seven dogs, six cats, nine rabbits, three guinea pigs, five white rats, three cocks, and approximately thirty frogs, Swab found that the toxin is a protoplasmic poison to peripheral nerve and striated muscle tissues. It has an especially selective effect on the peripheral nerves.

The histological changes in the nuclei of the third and fourth cranial nerves were round cell infiltration, the packing of lymphoid cells into the parenchyma, extravasation of red blood cells, distention of the capillaries with erythrocytes, stagnation of blood, the migration of lymphoid cells, thickening of the capillary endothelium, neuronophagia, chromatolysis, satellitosis, necrobiosis, nuclear displacement, nuclear shrinking, vacuolization, powdery granulation of Nissl bodies, complete disintegration of the ganglion cells, and an increase of neuroglia.

Similar changes were observed in other parts of the midbrain. Besides a diffuse infiltration of small round cells beneath the ependymal lining of the third ventricle, diffuse round cell infiltration and massive extravasation of erythrocytes occurred in the meninges. The meningeal vessels were distended with red corpuscles. Thrombosis was not frequent in the midbrain.

The changes in the optic nerves were focal infiltration into the parenchyma, a diffuse increase of neuroglia, and round cell infiltration of the pial and arachnoidal sheaths. The changes in the optic tracts were round cell infiltration, extravasation of erythrocytes, emigration of lymphoid cells, and stagnation of blood. The chiasmal changes were maximal infiltration, excessive packing of lymphoid cells in the parenchyma, and extensive extravasa-



tion of red cells. The retinal changes were fat formation in the ganglion cell layer, pyknosis chromatolysis, and vacuolization of the ganglion cells, a powder like reduction of the pigment granules, engorgement of the vessels with red corpuscles, and stagnation of blood. In the choroid there was maximal infiltration involving all layers. The corneal scleral junction showed round cell infiltration. In the ciliary body round cell infiltration was associated with an increase in the connective tissue element.

The exudate consisted chiefly of lymphocytes and monocytes some of which had differentiated into polyblasts while others had become transformed into plasma cells. The exudate occurred for the most part about the vessels, but in many instances there was a tendency toward migration into the parenchyma. Where maximal infiltration was noted as many as fifteen rows of lymphoid cells were present around the vessel. **LESLIE I. MCCOY, M.D.**

**Gay L. N. The Treatment of Ocular Tuberculosis with Tuberculin** *Arch. Ophthalmol.*, 1930, 25, 259

Tuberculin may be used intradermally for diagnosis and subcutaneously for treatment. In diagnosis, minute doses of old tuberculin (0.0005 mgm) are safer and more accurate than larger doses (from 1 to 5 mgm). The treatment consists of subcutaneous injections of bouillon filtrate with a dosage which begins with 0.00005 mgm and is gradually increased over a period of months to 100 mgm. This should be repeated weekly for at least three months. The use of bacillus emulsion is inaccurate because of the very high dilutions employed (1:100,000,000). Constant observation of the eyes is very important. If a focal reaction occurs the subsequent dosage should be reduced.

The thirty cases of ocular tuberculosis reviewed by the author presented no other evidence of tuberculosis except hypersensitivity to tuberculin. The result of treatment was improvement of vision with arrest of the disease which ultimately would have caused blindness.

Tuberculin does not produce healing, by a non-specific reaction. Its effect is due possibly to immunological desensitization of diseased tissue. For the proper treatment of ocular tuberculosis the wide differences between immunological antigens and chemical reagents must be recognized.

Tuberculin should never be employed in the treatment of a diseased eye until all foci of infection have been removed. Its use is indicated when after from three to six months removal of infection brings no improvement. **LESLIE I. MCCOY, M.D.**

**Klauder, J. V. and Robertson H. F. The Wills Hospital Clinic for the Treatment of Ocular Syphilis** *Am. J. Ophthalmol.*, 1930, 25, 285

The proper treatment of syphilis has become very complicated, especially in cases in which the eyes are involved. At the Wills Hospital Philadelphia, which is devoted exclusively to eye disorders, all luetic cases are treated in a special department

under the direction of syphilologists. Each case is highly individualized, the staff and resident ophthalmologists collaborating in the treatment. Potassium iodide is used in all cases. Sodium iodide is given intravenously in interstitial keratitis and in lesions of the oculomotor nerves. Mercury is indicated when arsenicals are not well tolerated. Bismuth is highly regarded, especially for interstitial keratitis.

**SAMUEL A. DUFF, M.D.**

**Mayou M. S. Sarcoma of the Iris** *Brit. J. Ophthalmol.*, 1930, 13, 152  
**Duke Elder, W. S. and Stallard H. B. Leucosarcoma of the Iris** *Brit. J. Ophthalmol.*, 1930, 13, 153

MAYOU states that sarcoma of the iris is rare. It may be pigmented or unpigmented. He reports four cases of the pigmented type. The growth is probably always derived from pigmented nevus. It is most frequent between the ages of thirty-five and fifty-five years and slightly more common in females than in males. It is difficult to tell whether the tumor starts at the iris root or near the ligamentum pectinatum. The tension is increased by the tendency of the growth to spread into the fibers of the ligamentum pectinatum and the canal of Schlemm.

The increase in tension may be the only finding by which a benign tumor can be distinguished from a malignant tumor. It has been claimed that loss of iris mobility is an important diagnostic factor, but the author has not found this to be true.

DUKE ELDER and STALLARD review twenty-five cases of leucosarcoma of the iris which they found reported in the literature. Slightly more than half of the patients were males. The ages ranged from one to eighty years. The duration of the symptoms and signs varied from three weeks to twenty years. One patient complained of pain and five of diminished vision in the affected eye. One patient was blind and one had recurrent attacks of hyphema. Three gave a history of injury and three of attacks of inflammation.

The tumor involved the temporal half of the iris in 4 per cent of the cases, the nasal half in 12 per cent, the upper nasal quadrant in 22 per cent, the lower nasal quadrant in 16 per cent, the lower half of the iris in 28 per cent, and the lower temporal quadrant in 32 per cent.

It was nodular triangular diffuse globular, or pedunculated. Obvious vasculature was noted in six cases. Nine specimens were described as consisting of spindle cells, three of round cells, and six of a mixture of round and spindle cells. Absence of pigment, mitotic figures, intercellular tissue, inflammatory reaction and degenerative changes was noteworthy.

The complications were glaucoma, lens opacities, and infiltration of the retina.

If the tumor is limited to the iris, removal by iridectomy is permissible; otherwise, enucleation should be done. After iridectomy the patient should be kept under constant observation. The prognosis is relatively good if the tumor is completely removed.

**LESLIE I. MCCOY, M.D.**

Agatston, S. A. Retinal Angiospasm. Its Relation to Arteriolar Disease. *Am J Ophthalm*, 1930, xii, 309

The various types of arteriosclerosis as seen in the fundus are described. Angospasm is not only an early sign, but also the principal cause, of arteriolar disease. Its control would mean the prevention of severe types of arteriosclerosis. Benign hypertension is merely an early stage of malignant arteriosclerosis. Arteriosclerosis is always secondary in young persons and primary in old persons. Changes in the fundus are proportionate to the general development of the disease. In the absence of fundus changes, arteriosclerosis does not exist.

SAMUEL A. DURR, M.D.

Fuchs, E. Classification of Retinitis. *Arch Ophthalm*, 1930, iii, 393

The first neuron or neuro epithelium consists of the rods and cones with their nuclei. A congenital affection of the neuro epithelium is seen in albinism and hemeralopia. An acquired disease is idiopathic hemeralopia. Exogenous agents affecting it are light rays and the X rays. Poisonous substances may produce acute lesions of the pigment epithelium. Mechanically, the first neuron is at times affected in extensive leukoma or staphyloma of the cornea and in softening of the eyeball after perforation and escape of the contents.

The second neuron comprises the inner granular layer from which glioma develops through some anomaly. In acquired diseases this layer is especially predisposed to lesions originating in the vessels.

The third neuron is composed of a layer of ganglion cells and nerve fibers. Congenital lesions of this layer of the retina are found in amaurotic idiocy. Acquired changes may be found after poisoning by methyl alcohol, tobacco, quinine, and arsenic. The ganglion cells die rapidly after obstruction of the central artery, division of the optic nerve, or atrophy of the optic nerve. The small amount of mesoblastic tissue within the retina is found in the walls of the vessels. Angiomatosis retinae is considered an anomaly of development. Acquired diseases of the retina originating in the vessels are due to an abnormal condition of either the blood or the walls of the vessels.

GEORGE R. McALIFF, M.D.

## EAR

Segura, E. V. Ear Complications in Scarlet Fever (Complicaciones óticas de la escarlatina). *Re otoneuro oftalmol y de cirug. neurol*, 1930, v, 104

Suppuration of the middle ear is quite frequent in scarlet fever. The author says it occurs in from 5 to 20 per cent of cases. He does not agree with Pöhtzer that severe otitis in scarlet fever occurs early in the disease and mild otitis during convalescence. He has seen cases in which otitis developing with the beginning of the exanthem subsided in a few days, and other cases in which otitis beginning late was very severe. Some otologists believe that when

otitis begins early, it is caused by blood infection, and when it begins late it is of eustachian tube origin. In Segura's opinion, the infection always occurs through the tube from the angina. The streptococcus seems to be the causative agent in the majority of cases. Cartie says that the scarlet fever virus itself may cause the pathological lesions of scarlatinal otitis and the resulting suppuration.

Simple otitis media is associated with pain of varying degree and an intense exudative inflammation of the mucous membrane which may cause perforation of the tympanic membrane. It causes a marked decrease of hearing by bone transmission and shows a tendency to heal though it may cause mastoid and intracranial complications. In necrotic otitis there is, in addition, a very destructive necrosis which may cause serious complications necessitating emergency surgical treatment. The factors that determine the severity of a case of scarlatinal otitis are the patient's constitution, the pneumatization of the temporal bone, and the virulence of the bacteria. The pneumatization of the temporal bone is discussed by the author at some length.

One of the possible complications of acute otitis media is labyrinthitis. In any case of scarlatinal otitis a careful otoscopic examination should be made for signs of involvement of the mastoid.

A case of simple otitis media can generally be cured by the establishment of good drainage. Preventive treatment is indicated in all cases of scarlet fever. As adenoids favor the development of otitis media, they should be systematically removed. The nasopharynx should be cleansed with a warm alkaline solution of sodium borate and resorcin, methylene blue, or neosalvarsan and resorcin in a glycerized solution.

AUDREY G. MORAN, M.D.

Holsclaw, F. M., Boehm, C. A., and Bierman, J. M. Otitis Media and Mastoiditis in Infants Under Three Months of Age. *Am J Dis Child*, 1930, xxxix, 747

The authors state that diarrhoea in infancy which does not respond to dietary management may be due to toxins from infection of the middle ear or mastoid. When infection of the middle ear is found, early paracentesis of the tympanic membrane should be done. If rapid improvement does not follow paracentesis and supportive measures, involvement of the mastoid is almost certain. Early operation with care to open all of the mastoid cells involved offers the best chance for recovery and is associated with little risk.

JAMES C. BRASWELL, M.D.

Bunch, C. C., and Grove, R. C. Some Effects in Later Life of Otitis Media in Infancy. *Ann Otol., Rhinol. & Laryngol*, 1930, xxxix, 1

A group of children ranging in age from seven to sixteen years who, according to their hospital histories, had had otitis media in infancy, were returned to the Johns Hopkins Hospital, Baltimore, for otological examination during the period from October, 1928, to June, 1929. Roentgenograms

showing the development of the mastoid were made in fifty two cases. The cases selected for examination were those in which repeated myringotomies had been done during the patient's hospitalization. Thirty ears (19 per cent) had an appreciable loss of hearing when examined. Ten of these thirty were discharging. Dry perforations were present in five. The tympanic membranes do not necessarily present evidence of repeated myringotomies after a period of years since in twelve ears of this group the tympanic membranes were normal. Except in the cases with a discharge the otoscopic examination gave little idea as to the relative hearing power.

Cases are presented which show that other factors besides otorrhea must play an important part in the pneumatization of the mastoid and the loss of acuity of hearing. A severe otitis media in infancy does not necessarily result in arrest of the process of pneumatization of the mastoid. Roentgenograms of the mastoids can be interpreted only in conjunction with clinical evidence as an extensive pneumatization may be present after an otitis media of five years duration and on the other hand dense sclerosis may be present after an otitis media of only four months duration.

### NOSE AND SINUSES

Shaheen H B. Nasopharyngeal Fibroma. *J Laryngol & Otol* 1930 dv 259

The author reviews fifty eight cases of nasopharyngeal fibroma. Nasopharyngeal fibromata are usually of basioccipital or basisphenoid origin. They consist almost entirely of fibrous tissue rich in blood vessels and at times may show inflammatory, cystic, myxomatous, sarcomatous, or carcinomatous change. By extension they may involve the eustachian tube, septum, sphenoid or antrum. While they are clinically malignant they do not produce metastases. At first mouth breathing may be the only symptom but as the growth extends, headache, epistaxis, deafness, lachrymation, diplopia and asymmetry of face may occur.

The tumors must be differentiated from nasal and antral polyps, sarcoma and carcinoma.

The author operates on nasopharyngeal fibromata under chloroform anesthesia. Moutre's lateral rhinotomy gives the best access. The base of the growth is first attacked from the mouth and freed from the basal aponeurosis. Profuse bleeding occurs, but soon stops. When the patient's condition is poor, palliative treatment is given with the roentgen rays, diathermy or radium.

In the cases reviewed there were four deaths three due to postoperative shock and one to meningitis. GEORGE R. McALLISTER, M.D.

Jones E L. Iodized Oil as an Aid in the Diagnosis of Chronic Maxillary Sinus Disease. *Arch Otolaryngol*, 1930 xi 475

In diseases of the maxillary sinus the use of radiopaque oil is an important diagnostic procedure.

The oil should be employed whenever doubt exists as to the presence or nature of disease of the sinus. The author includes in his article a series of roentgenograms showing typical filling defects.

The iodized oil is injected into the antrum by means of a small trocar introduced through the inferior meatus of the nose. In suppurative cases the preliminary study includes roentgenography and lavage with a physiological solution of sodium chloride. In non suppurative cases the irrigations are omitted. Complete filling of the sinus is advocated. Roentgenograms are made with the patient in Water's position. The sinuses are allowed to empty without interference since the cavity usually drains in from twenty four to forty eight hours.

The roentgenograms following the injection of the oil indicate whether the membrane is thickened, smooth or polypoid. The size, shape and capacity of the antrum can be accurately determined. No harmful effects from the use of this method have been noted, but iodized oil should be employed with caution in the cases of patients with toxic goiter, active tuberculosis or idiosyncrasy to iodine.

W. M. PATON, M.D.

### MOUTH

Padgett E C. The Repair of Cleft Palates After Unsuccessful Operations with Special Reference to Cases with an Extensive Loss of Palatal Tissue. *Irish Surg* 1930 xv 453

In 1764 Le Monnier, a French dentist reported the first successful repair of a cleft velum. Later successful results were obtained by von Graefe of Germany in 1817, Roux of France in 1819 and Warren of America in 1820. Dieffenbach reported the first successful closure of both the hard and the soft palate in 1834. Bazeau in 1833, and von Langenbeck in 1861, claimed originality for the operation of Dieffenbach with its lateral incisions but today the operation bears the name of von Langenbeck.

Fergusson has generally received credit for first advocating severance of the palatal muscles (1845) and also for suggesting osteotomy of the horizontal processes of the palatal bones to obtain relaxation (1873). It appears however that the former procedure was first carried out by Froniep in 1823 and the latter procedure by Dieffenbach in 1861. Billroth in 1861, made the suggestion that the hamular processes be fractured to relieve tension. The use of the mucosal flap from the septum to aid in the repair of the fissure was done first by Lannelongue in 1877. The 'criss-cross flap' operation of Davies Colley for closure of the hard palate was reported in 1800. In 1893, Brophy suggested the wiring operation for bringing the separated alveolar ridges together at an early age. Finally, in 1902 the Lane operation, an extension of the principle of the Davies Colley flaps to both the hard and the soft palate, was introduced.

The von Langenbeck operation with its lateral releasing incisions, loosening of the raphe at the pos-

terior end of the palatal bones, and preservation of the posterior palatine artery to each flap seems to have withstood the test of time for the routine case and doubtless is justly the most popular operation for the usual cleft palate.

One of the outstanding needs in surgical intervention of the cleft palate today is a workable procedure which effectually lengthens the soft palate.

The author classifies cases with severe damage of the palate into the following three groups:

1 Those in which midline union is probable or has occurred, but the velum is markedly atrophic or definitely shortened by a cicatrix.

2 Those in which, after operation, the tissue of the hard palate is preserved so that the closure of the hard palate has been obtained or is obtainable, but a considerable part of the velum has been lost.

3 Those in which a previous operation has resulted in sloughing of so much of the hard and soft palates that repair is impossible without the use of tissue from other sources than the mouth.

The obvious need in cases of the first group is the addition of tissue without interference with mobility so that the velum can come in contact with the posterior pharyngeal wall. In palates of the second and third groups, any soft-tissue diaphragm built in to take the place of the soft palate or the whole palate, respectively, which does not obstruct breathing ought to be an aid in closing off the nasopharynx from the oropharynx in the act of articulation.

Padgett reports two reoperations performed for failures resulting in deformities of Group 1 and two for failures resulting in deformities of Group 2. A mucous flap was raised from the posterior pharyngeal wall and sutured to the defective posterior part of the palate after the edges had been freshened by turning small flaps on them. The flap was severed from the posterior wall in one case, but was left attached in the three others. During a period of observation ranging from ten months to two and one half years improvement in articulation has been noted in all of the cases. It is described as "definite," "fairly marked," "remarkable," and in one case of mental deficiency, "difficult to judge." One of the patients reported difficulty in breathing during a cold.

Following the operations in the first two cases, which were performed in February 1927, Kirkham reported a case in which he sutured together the superior constrictor muscle of the pharynx at the sides of the pharyngeal cavity. Speech was nearly normal during the three days that the stitches held. Kirkham was led to believe that the shortening of the loop of the superior constrictor muscle was significant and had more of a bearing on correct articulation than had been thought. In 1865 Passavant called attention to the hypertrophy of the superior constrictor muscles of the pharynx in the patient with cleft palate. Overdevelopment of the superior constrictor muscle is attributed to the fact that this is the only muscle used by the patient with cleft palate to close off the nasopharynx from the oropharynx in articulation.

The author attributes some of the improvement in speech in one of his cases to a tendency of the superior constrictor loop of muscle to be pulled forward somewhat by the flap which connects the velum with the posterior pharyngeal wall but he believes that more important than the tendency of the forward pull is the narrowing of the pharynx obtained by removal of the central mucosal strip.

Other ideas on palate lengthening have been advanced by Schoenborn, Passavant, Sedillot, Rosenthal, Von Kuster, Blair, Dorrance, Limberg, and Loeff.

In persons in whom only remnants of both the hard and the soft palates remain after operations followed by sloughing a substitute for palatal tissue can be built from tubed pedicled flaps from either the neck or the arm. The chief question is whether or not a complete new palate built in with inert tissue is of enough functional value to compensate the patient for the tedious operative procedure.

Padgett reports three cases of the Group 3 type. One of the patients, a girl, showed marked improvement in speech and even palatal movement following restoration of the palate by a tubed flap from the arm and a mucosal flap from the pharynx. Another infant, died during the course of repair which was being made by jumping a tubed flap from the chest to the cleft lip and alveolus and then into the palate. The third patient, a man, acquired nearly normal speech following repair by a tubed flap from the arm and a mucosal flap from the pharynx. A tracheotomy was necessary in this case and the possibility that it may be necessary should be considered in every case.

The ideal of the repair of a palatal defect by a flap from elsewhere than inside the mouth is rather ancient. The first to attempt such repair was Blasius who used a flap from the neck, but was unsuccessful. Thiersch in 1867 and Rotter, in 1869 employed the principle successfully. Later the method was successfully employed by von Eiselsberg and Blair.

JAMES B. BROWN, M.D.

## PHARYNX

Pierson, P. H. Posttonsillectomic Pulmonary Abscess Medical Aspects. *Arch. Otolaryngol.*, 1930, xi, 279.

Holman, E. Posttonsillectomic Pulmonary Abscess Factors in Healing. *Arch. Otolaryngol.*, 1930, xi, 287.

Schall, L. A. Pulmonary Abscess Following Tonsillectomy, Bronchoscopic Considerations As an Aid to the Surgeon. *Arch. Otolaryngol.*, 1930, xi, 300.

PIERSON states that pulmonary abscesses following operations on the upper respiratory tract or teeth may be produced by aspiration or emboli. The anaerobes may be of importance in the formation of abscesses in otherwise merely pneumonic processes. In the diagnosis and treatment of pulmonary abscess, physical signs are less helpful than a carefully recorded history and a series of roentgenograms.

grams. The bronchoscopist and surgeon should be in frequent consultation with the internist.

The development of pulmonary abscess after tonsillectomy is best prevented by thorough examination of the patient before the operation to rule out acute and localized pulmonary disease and by careful attention to hygiene of the mouth before and after the operation.

HOLMAN states that accurate localization of the abscess by stereoscopic and lateral roentgen examination is imperative. Needling without direct visualization of the abscess by the resection of ribs is absolutely contra indicated. The danger of pleural infection in the absence of adhesions between the parietal and visceral pleura is obvious. Holman recently saw a case in which death occurred from massive empyema following the intercostal aspiration of an intrapulmonary abscess.

If the parietal and visceral pleura are not adherent at the time the rib is resected the wound should be packed with gauze to approximate the two pleura by pressure. Several days later the abscess may be opened by incising the pulmonary tissue with a black (not red) cautery to char the tissue slowly and seal the pulmonary veins against a possible fatal embolism of air or pus.

The number of ribs resected should be sufficient to permit rather extensive cauterization of the involved pulmonary tissue. The cauterization may be done in two or more sittings. Care is necessary to avoid getting beyond the adherence of the visceral and parietal pleura, but wide cauterization is essential to secure adequate drainage of all of the pockets of pus surrounding the main abscess.

The use of heavy rubber tubing for drainage is contra indicated because of the danger of injury to the pulmonary tissue from contact with the hard inflexible tube. Such injury has resulted in fatal hemorrhages and cerebral emboli. The cavity should be well packed with gauze smeared with petrolatum or with acriflavine gauze to serve as a bulwark against which the lung may find support during the expiratory effort of coughing. This is most important in the immediate postoperative period in order to avoid bronchogenic spread of the infection by the accumulation of pus in the bronchi surrounding the abscess.

Drainage should be supplemented by absolute rest in bed and the usual supportive measures until all evidence of the abscess has disappeared.

The residual bronchial fistula may close spontaneously but healing may be accelerated by the repeated injection at intervals of from two to four days of a paste composed of 30 parts of bismuth subcarbonate to 70 parts of petrolatum. A large fistula which shows little sign of closing must be treated by mobilization of the surrounding pulmonary and fibrous tissue, inversion of the bronchial opening and the resection of additional ribs overlying the cavity.

Large chronic abscesses with rigid non compressible walls will require more extensive operations

such as phrenicotomy or partial or complete paravertebral thoracoplasty. When an entire lobe is riddled with multilocular abscesses lobectomy may be necessary. The method of choice for lobectomy is probably a combination of Archibald's principle of collapsing the wall of the chest to approximate the hilus and the chest wall and Whittemore's method of exteriorization of the lobe with subsequent removal by repeated cauterization.

SCIALI states that the bronchoscopist may aid the thoracic surgeon in localizing an abscess by following the pus stream to its source and by making a pneumographic examination.

The bronchoscopist can improve drainage by dilating strictures and removing granulation tissue obstructing the bronchus.

In certain cases bronchoscopic sounding permits the surgeon to open the abscess by cutting down on the bronchoscope. JAMES C. BRASWELL MD

## NECK

Curtis G. M. Intrathoracic Gout. *Surg Clin North Am*, 1930 3 313

In presenting a case of intrathoracic gouter the author discusses the various types of intrathoracic gouter, their frequency, and their mortality. By a roentgenological study in a series of such cases he found that after operation the trachea resumes its normal position in eight weeks.

Intrathoracic gouters are usually nodular. They occur more frequently on the left than the right side probably because of the position of the innominate artery and the superior vena cava. Their blood supply is maintained from above. As a rule they do not become adherent. They tend to grow and undergo cystic and degenerative changes especially vascular changes with resulting hemorrhages. Ultimately they may undergo malignant degeneration.

Even when there are relatively few symptoms of compression or thyrotoxicosis operation is advisable. W. O. JOHNSON MD

Pemberton, J. DeJ. Gouter Management of the Poor Surgical Risk. *Arch Surg*, 1930 55 501

The introduction of iodine in the pre operative preparation of patients with exophthalmic gouter has been the most momentous single advance in the treatment of diseases of the thyroid gland. Surgery of this gland has now been placed on a sound basis similar to that of other branches of general surgery. Prior to the use of iodine the mortality rate was high but today uncertainty has been replaced by safety.

A review was made of all patients with exophthalmic and adenomatous gouter operated on in the Mayo Clinic in the period from January, 1926 to December 1928 to determine the influence on the mortality rate of the patient's age, the duration of the disease and the severity of the hypothyroidism as indicated by the basal metabolic rate. During

this period 7,252 patients were operated on. The mortality rate was 0.9 per cent in cases of exophthalmic goiter and 1.3 per cent in those of adenomatous goiter with hyperthyroidism.

By reducing the incidence and severity of the postoperative reactions, the most uncertain of the operative hazards, iodine medication has made it possible to evaluate more accurately other factors influencing the surgical mortality rate. By proper evaluation of potential dangers, the surgeon is enabled today to predetermine with a reasonable degree of accuracy the surgical hazard of the patient with goiter. The success of the operative treatment is dependent largely on the avoidance of prolonged general anaesthesia and technical errors. In the postoperative care of the handicapped patient close supervision is of great importance. Treatment with oxygen is a valuable measure in postoperative pulmonary oedema, pneumonia, and respiratory obstruction.

Gillespie, M. G. Postoperative Hypothyroidism  
*Minn. Med.*, 1930, viii, 235

The author reports the findings of a follow-up examination of 209 patients who had been subjected to thyroidectomy for goiter from one to seven years previously. In 25 patients (approximately 5 per cent) a definite hypothyroidism or myxoedema was present with a basal metabolism ranging from -15 to -44.

Twenty patients with basal metabolic rates ranging from -10 to -15 were not materially benefited by thyroid medication. The chief complaints in the cases of hypothyroidism were weakness and fatigue, and the chief objective findings oedema and a low metabolic rate.

The author draws the following conclusions:

1. Persons operated upon for goiter should be subjected to more careful study, especially as regards the metabolism.

2. In all cases of definite hypothyroidism, proper thyroid medication will cause improvement.

FRANK J. MCGOWAN, M.D.

Simonds, J. P., and Brandes, W. W. The Size of the Heart in Experimental Hyperthyroidism  
*Arch. Int. Med.*, 1930, xiv, 503

The authors state that it is difficult to obtain accurate data on the effect of hyperthyroidism on the size of the heart. Willis and Boothby have observed that the hearts of most patients with exophthalmic goiter and adenomatous goiter with hyperthyroidism are moderately enlarged. The experimental work on the effect of hyperthyroidism on the size of the heart which has been recorded in the literature appears to have been limited to rats and rabbits. Simonds and Brandes report experiments on eleven dogs. Ten of the dogs were given 10 gm. and one dog was given 20 gm. of desiccated thyroid daily for periods varying from twenty-two to one hundred days. The results led to the following conclusions:

1. Desiccated thyroid fed daily to healthy dogs may produce hypertrophy of the heart.

2. The hypertrophy is related to the body weight and occurs in animals which have lost more than from 25 to 35 per cent of their original body weight. When the weight loss exceeds 35 per cent, the heart loses the weight it gained in hypertrophy so that finally the ratio between the body weight and the heart weight approaches that of simple inanition.

3. The hypertrophy involves all of the heart, but the increase is slightly greater in the left ventricle than in the other chambers. R. V. B. SHIER, M.D.

Thompson, W. O., Brailey, A. G., Thompson, P. K., Cohen, A. C., and Thorp, E. G. The Range of Effective Iodine Dosage in Exophthalmic Goiter. II. The Effect on the Basal Metabolism of the Daily Administration of One-Half Drop of Compound Solution of Iodine. III. The Effect on the Basal Metabolism of the Daily Administration of One Quarter Drop of Compound Solution of Iodine and of Slightly Smaller Doses, with a Summary of Results to Date. *Arch. Int. Med.*, 1930, xiv, 420, 430.

In the first of these two reports the authors review twenty unselected cases of exophthalmic goiter in which the average basal metabolism at the time of the patient's admission to the hospital was +54 and one half drop of compound solution of iodine (3 mgm. of iodine) was given daily. The results of the treatment are summarized in two tables and seven charts and compared with the results obtained in a series of cases previously reported in which one drop of the compound solution was given daily.

Sixty-five per cent of the cases showed a reduction in the basal metabolic rate of 10 per cent or more. The average maximum response occurred in seven days. As compared with the cases treated with one drop of the solution, the average reduction in the metabolism was only about half as great, a response was obtained in 23 per cent fewer cases, and the total reduction was less. It is therefore apparent that in the geographical region in which the tests were made one half drop of the solution is insufficient to produce the maximum reduction in the basal metabolism.

In the second of these reports the authors review fifteen unselected cases of exophthalmic goiter with a basal metabolism of +62 at the time of admission to the hospital which were treated with one quarter drop of compound solution of iodine daily and sixteen cases with a basal metabolism of +32 at the time of admission which were treated with one fifth drop of the solution. The results are summarized in eight tables and ten charts and compared with those obtained with one drop and one half drop of the solution. They show that there is a minimum amount of iodine that can produce a maximum point of saturation of the gland with an associated reduction in the basal metabolism. Amounts less than this minimum cause proportionately less improvement. In some cases small doses may interfere with the effect of large doses.

The authors conclude that from the standpoint of exophthalmic goiter the indiscriminate use of iodine in any form in the treatment of goiter is probably harmful  
W O JOHNSON M D

**Barr D P and Bulger, H A The Clinical Syndrome of Hyperparathyroidism** *Am J Med Sc*, 1930 cxxxv 449

Experimental hyperparathyroidism may be produced by the injection of too much parathormone (Collip). The first symptoms are restlessness respiratory distress vomiting and diarrhoea. These are followed by hæmatemesis melena collapse, and death. There is an increase in the calcium content of the blood accompanied by an increase in the excretion of calcium and phosphorus. Metastatic calcification has been observed in certain organs. In clinical cases resembling this condition which have been reported the most interesting finding was hyperplasia of the parathyroid glands.

The authors review briefly twenty nine cases of parathyroid tumors collected from the literature. In about 60 per cent there was disease of bone such as osteitis fibrosa cystica rickets or osteomalacia. Osteitis fibrosa cystica the most frequent finding is more common in females than males and usually occurs in adult life. The cysts and tumors affect principally the long bones pathological fracture may be the first sign. Microscopically the tumors show hæmorrhages and closely resemble giant cell sarcoma of the epulis type. In some cases softening and rarefaction of bone occur. In 1926 Mandl removed a parathyroid tumor in a case of osteitis fibrosa. In cases of this type there is a marked disturbance of calcium metabolism which is manifested by a high excretion of calcium in the urine and an increase of the calcium content of the blood serum. Calcium tones in the kidneys and ureters have been reported. Calcium deposits may be found in many organs and tissues. Functional muscular changes may occur. The authors report a case of osteitis fibrosa cystica with bone cysts giant cell tumors decalcification and softening of bone, muscular hypotonia nephrolithiasis and hypercalcaemia. Removal of a parathyroid tumor caused almost fatal tetany but arrested the progress of the disease and resulted in some improvement. In a second case in which the removal of a parathyroid tumor was followed by improvement the osteitis fibrosa cystica involved only the jaws. Barr and Bulger report also four other cases in which studies of the calcium metabolism showed hypercalcaemia with clinical evidence of hyperfunction of the parathyroid glands.

Hypercalcaemia should always arouse the suspicion of hyperparathyroidism, it is the only clinical sign of any great diagnostic importance. There seem to be no entirely valid reasons for deciding whether parathyroid hyperplasia is primary or secondary in osteitis fibrosa. In multiple myeloma it is probably secondary to the bone changes.

VERNE G BURDEN M D

**Arbuckle M F The Cause and Treatment of Cicatricial Stenosis of the Larynx** *Ann Otol Rhinol & Laryngol*, 1930 xxxix 134

The chief cause of necrosis of the laryngeal tissues is infection. The infection may be due to streptococci and allied pathogenic organisms but most commonly is caused by the diphtheria bacillus either alone or in association with other organisms. It may be the sequela of external trauma. Chondritis and perichondritis with subsequent stenosis may be caused by trauma during the course of treatment of laryngeal diphtheria or any form of acute obstruction of the larynx. Pressure on the cartilage of the larynx by a tracheotomy tube placed too high is one of the most frequent causes of laryngeal stenosis.

The treatment of cicatricial stenosis varies according to the type of the condition. In stenosis of the supraglottic hypertrophic type the scar tissue can be removed with instruments and the electrocautery. Bouginage is of value to stimulate resorption. Destruction of the cartilage and perichondrium results in more marked stenosis.

Laryngostomy has been successful, but is tedious and time consuming. For resistant cases of total atresia the author has devised a method of relining the reconstructed larynx with a Thiersch graft. He has employed this technique in four cases with a successful result in three. After preliminary laryngofissure and removal of the scar tissue from the lumen a piece of sea sponge cut to fit the reconstructed lumen and covered by a Thiersch graft is placed in position. Expulsion of the obturator is prevented by a retaining suture. At the end of eight days the stay suture is cut and the sponge withdrawn by direct laryngoscopy. Additional treatment is unnecessary. The one failure occurring in the author's four cases was due to contamination of the graft by vomiting.

The use of electrically heated bougies in cicatricial stenosis has proved quite satisfactory. This method was introduced by Dean. The bougie is heated to 40 degrees C. and left in place for thirty minutes. The treatment is repeated at intervals of four or five days over a period of from eight to ten months. The size of the lumen is gradually increased. The author reports three cases in which this procedure was used.

W M PATON M D

**Zambrini A R Basavillbaso J and Becco, R The Present Status of the Treatment of Cancer of the Larynx (Estado actual del tratamiento del cancer de la laringe)** *Rev Asoc med argent* 1930 cxiii, 63

In cancer of the larynx irradiation with radium at a distance does not seem to be effective for if large enough doses are used they cause painful skin lesions. The application of radium within the larynx is possible, but as it requires tracheotomy the authors believe it should be reserved for inoperable cases. They emphasize that in judging the results of radium irradiation it is necessary to take

into consideration the fact that radium has generally been used in only the most advanced cases of cancer of the larynx

The statistics of the National Radium Institute since 1924 show ninety six cases given radium treatment. Of the eight patients treated in 1924 none is alive, of the five treated in 1925, only one is living, of the sixteen treated in 1926, two are living, of the twenty eight treated in 1927, five are living, and of the twenty three treated in 1928, nineteen are living

Coagulation by diathermy has been done frequently of late. The authors think it an excellent supplementary method to surgery. Resection of the superior laryngeal nerves has also been tried, but has no effect on the growth of the tumor

Surgical treatment may consist of either pharyngotomy or total laryngectomy. The former is the ideal operation for circumscribed laryngeal tumors. Its mortality is low, and it does not injure the voice or interfere with respiration. It is indicated only

when the tumor has not passed the midline. All recurrences after this operation have developed in cases in which it was done after the tumor had invaded the subglottic region. Total laryngectomy is indicated in cases in which it is apparent that pharyngotomy will not be successful. The contraindications are cachexia, serious disease of the lungs or heart, ulcerations of the skin, and enlarged glands in the mediastinum. As laryngectomy is a serious and mutilating operation, some surgeons do not favor it. The patient also is apt to reject it when he learns that it will cause the loss of his voice and necessitate the continuous wearing of a cannula. However, in cases too advanced to be helped by the less radical operation it is the only means of saving life.

The authors conclude that the best treatment for cancer of the larynx is surgery supplemented by the various physical measures.

AUDREY G. MORGAN, M.D.



# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Reuben M S. and Chasnoff J. Cisterna Magna Pressure Syndrome *Arch Pediat* 1930 xlvii, 201

The authors advocate cisternal puncture in cases of meningitis with a rapid pulse and respiration and a high or low temperature but no pulmonary signs. They believe that the symptoms are due to pressure exerted on the medulla and pons by distended cisternæ and are not the result of infection or toxæmia. In many cases they have noted immediate improvement following cisternal tap.

At the first tap no serum is introduced regardless of the character of the removed fluid. If the symptoms recur, another tap is performed. If the fluid withdrawn is turbid and the previous examination revealed organisms serum is introduced but the amount does not exceed half the amount of fluid withdrawn. As in these cases the cisterna apparently does not communicate with the rest of the subarachnoid space, spinal tapping will not relieve symptoms caused by a distended cisterna. The condition is always fatal if the syndrome is allowed to continue without relief for seven days.

The anatomy of the cisternæ and the character of the ventricular and spinal fluid in meningitis are discussed.

ROBERT ZOLLNER, M.D.

Walker C. B. Lesions of the Chiasmal Region *Am J Ophth* 1930 xiii 193

This report consists of two parts, an anatomical part and a pathological part.

The anatomical part illustrated by two composite drawings gives detailed descriptions of the diaphragma sellæ, the meningeal coverings of the hypophysis, the circle of Willis, the chiasma and the course and relations of the third, fourth and sixth cranial nerves. Walker notes that the chiasma varies remarkably with respect to the diaphragma in both the vertical and the anteroposterior planes. The vertical distance between the chiasma and the diaphragma ranges from contact to an interval of 10 mm. In the anteroposterior plane the chiasma is found on the chiasmal sulcus in 5 per cent of the cases, on the central part of the diaphragma in 12 per cent, on the posterior half of the diaphragma and anterior part of the dorsum sellæ in 79 per cent, and entirely behind the diaphragma in 4 per cent.

In the pathological section of the report the author discusses aneurisms, primary gliomata of the chiasma, craniopharyngeal pouch tumors, other suprasellar tumors, pituitary syndromes, meningiomata of the tuberculum sellæ, olfactory groove meningiomata, and orbito ethmoidal osteomata.

Aneurisms of the basal vessels are not uncommon, their incidence being from 1 to 2 per cent. Half of them lie close to the chiasmal region. Some of them are associated with definite syndromes. Usually some of the cranial nerves are involved and blood is found in the spinal fluid. Recurrent leakage of an aneurism affecting branches of the fifth nerve and some or all of the third, fourth and sixth nerves may cause pain, migraine and more or less ophthalmoplegia. It accounts for many "migraine palsies."

Primary gliomata of the chiasma were found in 3 per cent of Cushing's 233 cases of tumors affecting the chiasmal region. Chiasmal tumors may cause primary optic atrophy, atypical hemianopic defects, excavation of the optic canals causing the sella to appear pear shaped in the roentgenogram and unilateral exophthalmos. Occasionally they are associated with von Recklinghausen's disease.

Craniopharyngeal pouch cysts are for the most part suprasellar and cystic and occur in children and young adults. On X-ray examination, calcareous deposits can be demonstrated in about 85 per cent of these tumors, whereas in pituitary adenomata calcium deposits are very rare.

Suprasellar tumors other than those of Rathke's pouch are about equal in frequency to tumors of pouch origin. They comprise suprasellar meningiomata, hypophyseal adenomata with a normal sella, cholesteatomata, gliomata of the third ventricle and gliomata of the chiasma. The symptoms produced by them vary according to their growth and extension. The field defects are varied. If the tumor is in the midline, a bitemporal defect is found, but if the tumor is asymmetrical, any variation up to homonymous hemianopsia is possible. Pressure and extension upward produce third ventricle symptoms of adiposity, diabetes insipidus, and hypersomnia. More extensive growths may produce the following syndromes, which are more commonly associated with tumors of the third ventricle: (1) the extrapyramidal syndrome of bradykinesia and rigidity, (2) the thalamic syndrome of central pain and painful hypertonicity, (3) Parinaud's syndrome (paralysis of conjugate vertical movement of the eye balls), and (4) Ix's syndrome (hemichorea). Lateral extension may affect the uncinate gyrus and cause all or part of the uncinate syndrome. Pressure downward on the hypophysis and infundibulum may produce secondary pituitary involvement with distortion of the sella and chnoids.

The pituitary syndromes described are hypopituitarism, including Simmonds disease due to infarct in the vessels of the anterior lobe of the hypophysis and producing early senescence (progeria), hyperpituitarism, dyspituitarism and apituitarism.

DAVID J. IMPASTATO, M.D.

Greenfield, J. G. Acute Disseminated Encephalomyelitis as a Sequel to "Influenza" *J Path & Bacteriol*, 1930, xxxiii, 453

This is a well illustrated article reporting two cases of encephalomyelitis following "influenza." The pathological changes were essentially those found in encephalomyelitis following vaccination smallpox or measles. The lesions consisted mainly of perivascular areas of demyelination and were discovered throughout the central nervous system.

In the author's opinion, these cases support the view that acute disseminated encephalomyelitis is a disease entity, which may be brought on or directed against the nervous system by certain febrile or exanthematous conditions.

DAVID J. IMPASTATO, M.D.

D'Aunoy, R., Friedrichs, A., and Zoeller, A. Gumma of the Brain *Am J Syphilis*, 1930, vi, 175

A woman twenty-eight years of age was admitted to the hospital in a stuporous condition on September 12, 1929. The illness had begun in the preceding May. Physical examination disclosed signs of advanced cerebral compression with bilateral papilledema and neuroretinitis. Examination of the spinal fluid showed a negative Wassermann reaction, 18 cells, and globulin +. The Wassermann test of the blood was positive. The patient died twelve days after her admission with signs of diffuse pneumonitis. A clinical diagnosis of cerebral tumor was made. Autopsy disclosed cerebral tumor and diffuse meningoencephalitis. Histological examination showed the tumor mass to be a gumma.

After a review of the literature, the authors conclude that there are no pathognomonic signs of cerebral gumma to differentiate it from other cerebral growths. Serological tests are of very little help and the therapeutic test is of no value. The treatment of these tumors is like that of any other cerebral neoplasm but should be supplemented by specific therapy.

DAVID J. IMPASTATO, M.D.

Shelden, W. D., and Lillie, W. I. The Importance of the Visual Fields as an Aid in the Localization of Brain Tumors *J Am M Soc*, 1930, xciv, 677

The authors report seven cases demonstrating the significance of the visual fields in a study of tumors of the brain and the many variations which such studies reveal.

Case 1 presented typical fields in the presence of a tumor of the olfactory groove. Tumors involving the basal portion of the frontal lobe may produce a similar picture. The Gowers-Paton-Kennedy syndrome was optic atrophy and scotoma on the side of the lesion and choked disk in the other eye. Further experience indicates that several combinations of signs may occur: (1) unilateral central scotoma and pallor, but normal conditions in the other eye, (2) bilateral central scotoma with normal fundi, (3) unilateral central scotoma with pallor of the disks, (4)

bilateral central scotoma with choked disks in both eyes, (5) unilateral amaurosis with atrophy and choked disk in the other eye, (6) unilateral amaurosis with atrophy in one eye and choked disk and central scotoma in the other, (7) central scotoma and various alterations of the peripheral fields due to secondary contraction resulting from choked disks, and (8) bilateral amaurosis.

Such variations in the ocular signs are indicative of the various influences to which the optic nerves are subjected and also of the associated influence of choked disks.

In certain cases, the situation of the tumor may be such as to affect the chiasm by extension, thus adding further changes in the fields. If the evolution of the ocular changes can be studied repeatedly, the data furnished permit an accurate estimation of the site, rate, and mode of extension of the tumor. The steadily progressive evolution of these signs is the main support of the diagnosis of tumor as distinguished from other conditions which produce some of the signs described, especially scotoma and optic atrophy such as are seen in vascular insults, optic neuritis, and retrobulbar neuritis.

In the second and third cases reported there were bitemporal hemianoptic defects of the visual fields characteristic of lesions about the optic chiasm. It is emphasized that when the routine technique of examination is employed, influences exerted on the chiasm may produce apparent dissociation of function with regard to the capacity for distinguishing form and color. This was evident in Case 3.

Tumors affecting the optic nerves, the chiasm, and either or both optic tracts in varied combinations and producing changes in the visual fields may arise from any of the structures about the chiasm. Some of the changes are: (1) bitemporal hemianopia for color, (2) bitemporal hemianopia for both form and color, (3) bitemporal scotomatous hemianopia for both form and color, (4) temporal hemianopia with amaurosis of the opposite side, (5) temporal hemianopia with successive changes which lead to amaurosis, such as central scotoma, cecocentral scotoma, enlargement of scotoma with islets of vision and amaurosis, (6) homonymous hemianopia for color, (7) homonymous hemianopia for form and color, and (8) homonymous hemianoptic scotoma for form and color.

The influence on the optic chiasm of distention of the third ventricle secondary to tumors in the posterior fossa of the skull has been assumed to be the cause of binasal hemianopia. Such fields are uniformly associated with secondary optic atrophy following choked disk and probably are a consequence of a local pathological process in the region of the optic disks. They are analogous to the defects in the fields observed in glaucoma.

Enlargement of the hypophysis results from a variety of pathological states manifested clinically by disturbance of stature, growth, metabolism, and endocrine functions. In some cases, changes in the visual fields may be a consequence.

The optic tract may be involved by tumors arising from the walls of the third ventricle, as in the fourth case cited. In two cases reported by Lillie the tumor arose from the roof of the choroidal fissure and affected the optic tract initially. Characteristic of tumors in this vicinity is the rapid development of complete homonymous hemianopia for form and color.

The intimate relation of the optic tracts to the cerebral peduncles, to the walls of the third ventricle to the ventricular system, to the temporal lobes and to the basal ganglia favors a variety of symptoms and functional disturbances depending on the site, rate, direction and degree of involvement of these structures by tumors.

The diagnostic problem consists in determining as far as possible the sequential relationship of the symptoms and the physical signs as these may reveal the evolution of the pathological process.

Cases 5, 6, and 7 reported by the authors show the problem presented by tumors of the temporal and occipital lobes. The greater separation of the visual fibers in the optic radiation permits gradual and partial impairment of function by tumors. According to Henschen the spatial relationship of the visual fibers remains constant. Thus homonymous quadrant hemianopia for form or color serves as a guide to the point of approach of tumors to the visual pathway. This offers no mark of exact localization, as it may occur in the temporal parietal, or occipital regions. More accurate localization requires the presence of other phenomena such as disturbance of the interpretive centers of hearing and vision. In the absence of such distinctive signs recourse may be had to ventriculography and to sufficiently extensive exposure by surgical means to permit direct inspection and palpation.

Eagleton W. P. Localized Bulbar Cisterna (Fornix), Meningitis, Facial Pain and Sixth Nerve Paralysis and Their Relation to Caries of the Petrous Apex. *Arch Surg* 1930, 21, 386.

In the differential diagnosis of the types of meningitis, appreciation of the various causes and types of facial pain and abductor paralysis and recognition of the syndrome of bulbar cisterna involvement are necessary.

In suppurative diseases of the middle ear both facial pain and abductor paralysis furnish valuable localizing information for the diagnosis between intradural and intra arachnoid inflammation. Properly interpreted, either facial pain or abductor paralysis will make possible a localizing diagnosis of caries of the apex of the petrous pyramid, localized pontile cisterna meningitis due to such caries, supuration of the sphenoidal sinus, and thrombophlebitis of the cavernous sinus and associated petrosal and basilar veins at a time when surgical intervention promises hope of recovery.

In benign cases, temporofacial pain is a referred pain due to irritation of a sensory communication by congestion of the bone in that portion of the anterior

surface of the petrous pyramid where the geniculate ganglion and the superficial great petrosal and vidian branches of the glossopharyngeal nerve are given off. In this region the nerves are in bony canals and extradural and cannot be separated from the bone.

Accordingly, temporofacial pain or even neuralgic pain in the supra orbital region around the eye or in the face or teeth which is associated with or follows otitis and is unaccompanied by signs of sepsis, cerebral irritation, or labyrinthitis calls only for complete removal of the mastoid cells with their perilymphatic cellular connections. When this has been done, continuation of the pain becomes of serious moment only when the sepsis continues.

First branch pain—pain behind the eye—in the presence of sepsis is significant of caries of the petrous apex from dural pulling of the middle fossa. If it is not revealed by mastoid examination or if it is associated with signs of posterior fossa irritation—bulbar meningitis, irregular stiff neck, sixth nerve paralysis—it calls for opening of the apex.

Symptoms of localized pontile meningitis originate from irritation of the cortex of the anterior surface of the pons. When the condition follows caries of the petrous apex, the meningeal signs of cortical bulbar irritation follow symptoms of osseous and dural disease of the middle fossa.

The syndrome of localized bulbar meningitis of otitic origin consists of (1) signs of dural irritation of the middle fossa of which facial pain, especially behind the eye and possibly associated with abductor paralysis is the most significant; (2) symptoms of arachnoid inflammation of the posterior fossa near the midline; (3) localizing, middle and posterior fossa symptoms combined; (4) semicomatose from which the patient can be easily aroused; (5) the supine position with eyes closed; and (6) intermittent recurrence of vertical nystagmus. All of these are signs of posterior fossa involvement.

DAVID J. IMAI, M.D.

## SPINAL CORD AND ITS COVERINGS

Davis L. Haven II A. and Stone T. T. The Effect of Injections of Iodized Oil in the Spinal Subarachnoid Space. *J Am Med Ass* 1930, 21, 772.

Iodized oil has been advocated extensively as an opaque medium for the roentgen diagnosis of diseases of the central nervous system and respiratory tract. It has been used for visualization of the genitourinary tract, the pouch of Douglas, the salivary ducts, the accessory nasal sinuses, cystic cavities and fistulous tracts, the blood vessels and the medullary cavities of bones.

As with all new procedures, the use of iodized oil has rapidly spread beyond the limits warranted by a knowledge of the potential dangers. Its application in diagnosis is as quickly followed by an increase in its application to therapeutics. Iodized oil has been advocated for the treatment of tuberculous

pericarditis and as an analgesic in sciatic neuralgia, lumbago, intercostal neuralgia, and certain forms of facial neuralgia. It has been used in the treatment of pulmonary conditions, syringomyelia, coccygodynia, nocturnal urinary incontinence, and lumbosacral arthritis. The reaction produced has been credited with causing resorption of the exudate and permanent cure in the serofibrinous exudates of pleurisy, tuberculous ascites, and serous effusions of joint cavities.

This article deals with the diagnosis of spinal lesions in clinical cases and the results of the experimental injection of iodized oil into the subarachnoid space. The authors found that in twenty-nine of thirty-one cases in which a laminectomy was performed a definite clinical localization was possible without the use of iodized oil. Of twenty-three cases in which the presence of a tumor was indicated by the clinical findings with considerable certainty, a tumor was found at operation in all but one. Of seven cases in which operation was performed only

on the basis of a suspicion of a tumor, arachnoiditis was found at the site of clinical localization in six and no pathological lesion was discovered in one. In the remaining case, arachnoiditis was diagnosed and verified at the level established clinically.

The results of the experimental injection of iodized oil into the subarachnoid space by cisternal puncture in dogs are presented. In eight of the ten acceptable experiments there were definite clinical indications of an irritative action of the iodized oil. On microscopic examination at intervals ranging from three to two hundred and fifty-two days after the injection, all of the cords showed changes directly proportional to the length of time the oil had remained in the subarachnoid space. Definite evidence of leptomeningeal reaction, fat encystment, and degenerative changes in the gray matter were found.

The authors conclude that localization of spinal cord lesions is possible by careful clinical study, and that the injection of iodized oil into the subarachnoid space is dangerous.

E. S. PLATT, M.D.

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Cheatle, Sir G. L. and Cutler M. Gelatinous Carcinoma of the Breast *Arch Surg* 1930 **xx**, 569

The authors present a study of eight carcinomata of the breast. They found that gelatinous degeneration is more common in carcinoma of the breast than is generally supposed. In a study of whole sections they covered gelatinous degeneration in tumors in which its presence was totally unsuspected. These observations led them to believe that if carcinomatous breasts were always systematically examined by means of whole serial sections, the discovery of gelatinous degeneration would be more frequent.

The process of gelatinous degeneration begins and ends in the epithelium. The areas in which it seems to have infiltrated the connective tissue stroma of the breast consist of the remains of degenerated epithelium which has disappeared completely, leaving only a gelatinous meshwork. The gelatinous degeneration begins and ends in epithelium confined within ducts and acini. It affects also the epithelium that has invaded normal structures. The final stage of both processes gives rise to morphological appearances that have been interpreted as evidence of a primary gelatinous degeneration in connective tissue cells.

The large size of some of the tumors examined was due to the wide distribution of apparently malignant epithelial neoplasia existing in ducts and acini. All or most of a duct or even of two ducts and their terminal branches and acini may be thus affected.

The presence of gelatinous degeneration in a carcinoma of the breast does not necessarily imply a low degree of malignancy, as is generally supposed. Four of the tumors studied by the authors were among the most malignant that can be encountered in the breast and resulted in death. Morphologically, they were highly anaplastic and clinically their high degree of malignancy was demonstrated by prompt recurrence, widespread metastasis and a rapid course.

The clinical course of tumors exhibiting gelatinous degeneration is determined chiefly by the biological properties of the epithelial elements they contain and does not depend on either the presence or the extent of the gelatinous degeneration. Carcinomata of the breast exhibiting gelatinous degeneration often possess a comparatively low degree of malignancy. On the whole, gelatinous degeneration is one of the secondary and adventitious changes that may occur in the course of any carcinoma.

MANUEL E. LICHTENSTEIN, M.D.

## TRACHEA, LUNGS, AND PLEURA

Tapia M. Phrenicectomy in Apical and Subapical Tuberculosis (La frenicotomía en la tuberculosis apical y subapical) *Arch de med. ciruj y especial*, 1930, **xi**, 335

The author reports eleven cases of apical or subapical tuberculosis treated by phrenicectomy. The histories are supplemented with roentgenograms. He states that although lesions at the base of the lung are sometimes favorably affected by phrenicectomy, the operation is indicated particularly for high lesions with a tendency toward retraction. Cases of early infiltration which do not respond to rest treatment show improvement after the operation. Pleural adhesions, especially those caused by effusions from pneumothorax, decrease the effectiveness of phrenicectomy. When the patient is unable to take sanatorium treatment, phrenicectomy has an economic indication. It is of no value as a functional test of the other lung. AUDREY G. MORGAN, M.D.

Ochsner, A. Bronchiectasis. *Am J W Sc* 1930 **clxv**, 385

Bronchiectasis occurs much more frequently than is generally assumed. The author believes that it is the most common of all chronic pulmonary affections. It has been attributed to (1) congenital dilatation of the bronchi, (2) cirrhosis of the lungs, (3) chronic pneumonia, (4) alterations in the bronchial secretions allowing the growth of organisms which cause infection favoring bronchial dilatation, (5) acute infectious diseases, especially influenza, pertussis and measles, (6) infections of the upper respiratory tract, especially sinusitis, (7) loss of nerve control, (8) stenosis of the bronchi and (9) chronic bronchitis. The author believes that the most frequent cause is chronic bronchitis.

Pathologically, bronchiectasis varies from simple dilatation of the tracheobronchial tree to excessive dilatation with marked changes in the walls of the bronchi. In the advanced stages the elastic tissue and musculature of the walls of the bronchi become replaced by fibrous tissue. The author is of the opinion that the dilatation is functional and occurs primarily as the result of infection within the bronchial tree, the fibrosis being secondary. He has observed 4 cases in which bronchial dilatation demonstrated roentgenologically disappeared completely after control of infection within the bronchi. The most frequent site of involvement by bronchiectasis is the left lower lobe.

The most common symptoms and signs of bronchiectasis are those of chronic bronchitis. By far the majority of persons suffering from bronchiectasis do not present the typical textbook picture of the con-

dition. The chief symptom is cough, which may or may not be associated with expectoration. There are relatively few other symptoms. The condition is often diagnosed as chronic bronchitis or recurrent acute bronchitis. The sputum is seldom profuse. Hemoptysis occurs in from 50 to 70 per cent of the cases. On physical examination the most important finding is limitation of motion on the affected side. In the early cases little else can be found. The diagnosis is made following the intrabronchial introduction of iodized oil. The author prefers the "passive" technique because of its simplicity and because it allows fluoroscopic observation of the mode of filling of the bronchi.

The surgical treatment of bronchiectasis has not been entirely satisfactory. Drainage of bronchiectatic cavities has been abandoned except after cauter pneumectomy. Collapse of bronchiectatic cavities is often rendered impossible by the fibrosis. In some cases operations on the phrenic nerve have been beneficial. The ideal procedure, at least theoretically, is removal of the diseased process. However, lobectomy is attended with a high mortality and should therefore be reserved for a relatively small group of cases. If lobectomy is to be attempted, the method of choice is the cauter lobectomy of Graham.

The medical treatment of bronchiectasis has been unsatisfactory. However, postural drainage is of benefit. The value of the dehydration or "thirst" cure is questionable. Since the use of iodized oil intrabronchially in the diagnosis of bronchial lesions, improvement has frequently been noted after this procedure. The author believes that repeated introductions of iodized oil are of distinct therapeutic value. He reviews 112 cases so treated. The largest number of fillings received by any of the patients was 16. The diagnosis of bronchiectasis was made in every case by fluoroscopic observation of the mode of filling of the bronchi. Roentgenograms were made for confirmation and record. In 32 per cent of the cases a symptomatic cure was obtained, and in 12 per cent of this number there was roentgenographic evidence of cure. In 36 per cent of the cases there was symptomatic relief but after an acute respiratory infection a temporary relapse occurred. Thirty-two per cent of the patients are still under treatment, but showed improvement at the time of this report.

The technique employed for the introduction of the oil was the passive technique in which the swallowing reflex is abolished by the application of 10 per cent cocaine to the anterior surface of the anterior tonsillar pillars and the oil is aspirated from the pharynx into the tracheobronchial tree.

ALTON OCHSNER, M.D.

Arkin, A. Bronchus Carcinoma. *Med Clin North Am* 1939, VII, 1255

During the past ten years the number of cases of bronchial carcinoma reported has increased in many countries. The frequency of bronchial carcinomata

as compared with all carcinomata has risen from 2 to 7 per cent. The increase is not explained by better diagnosis. It has been greatest in Germany, the United States, Austria, and Switzerland. In the Scandinavian countries, on the other hand, little or no increase has been noted.

Bronchial carcinoma is three times as frequent in males as in females, and is most common between the fortieth and sixtieth years of age. Its cause, like that of other carcinomata, is unknown, but chronic irritation is believed to be a predisposing factor.

For convenience in discussion, Arkin classifies bronchial carcinomata into the following types: endobronchial, hilar, mediastinal, central, lobar, pleural, and rheumatoid.

The endobronchial type may remain symptomless for months and may be discovered only on direct bronchoscopy. Bronchography may reveal a filling defect. In the presence of obstruction and atelectasis of the affected portion of the lung, the diagnosis is easier. Metastases may occur before the development of pulmonary symptoms.

The hilar type can be diagnosed by X-ray examination in the early stage. The X-ray reveals enlargement of the hilar shadow with a network of fine branching stripes which radiate into the surrounding lung tissue. The opposite hilum soon undergoes similar changes, the roentgenogram then suggesting miliary tuberculosis. When the mediastinal lymph nodes are invaded the masses may reach a tremendous size. The usual symptoms are cough, marked cyanosis, dyspnea, hoarseness, and in equality of the pupils.

In the central type, an early diagnosis is possible only by X-ray examination. The tumor shadow fades out into the surrounding lung tissue and usually sends out tumor strands in all directions. Later it spreads to an entire lobe or lung field. Repeated roentgenograms may be necessary for diagnosis. Clubbing of the fingers is present in most cases. In three cases cited by the author there was a toxic hyperplastic periostitis.

The lobar bronchial carcinoma is one of the most common types. It is seen more frequently in the upper lobes than in the lower lobes. The physical findings often closely resemble those of chronic fibroid unilateral tuberculosis or unresolved pneumonia. The roentgenogram shows that the infiltration is usually not limited by the interlobar fissure, but invades the adjacent lobe. Infiltrating strands can be seen at the tumor margin. As a rule the hilar shadows are enlarged. A tongue-like projection downward on the affected side differentiates the condition from tuberculosis and pneumonia. Repeated roentgenograms reveal extension of the process. The mediastinum is often drawn toward the affected side.

In the rheumatoid type, pains may be present in the extremities, spine, ribs, pelvis or skull.

Bone metastases of the osteoplastic or osteoclastic type and hyperplastic periostitis may occur. Metas-

tases may be formed any where in the body. A myeloid blood picture should be looked for in all cases.

The disease is incurable. Death usually results within two years but occasionally the patients survive for four or five years.

GEORGE A. COLLETT, M.D.

Courcoux A., and Lereboullet J. Spontaneous Simple Pneumothorax (*Le pneumothorax simple spontané*). *Presse méd.* Par. 1930, xxxviii, 349.

Six cases of spontaneous pneumothorax of non-tuberculous origin are reported. In this type of pneumothorax the clinical symptoms are less marked and the onset less sudden than in the tuberculous type. Sharp pain may be absent, and as in the authors' cases the dyspnea may not be severe. In one of the authors' cases the onset was so mild that it was impossible to determine its exact time from the patient's account. Several of the patients were able to go home or to the hospital unassisted, one of them walked a long distance. In most of these cases the pneumothorax did not appear to have been precipitated by effort. One of the patients was seized with violent pain in the right side at the moment of getting out of bed after a normal night and when in apparently perfect health. Respiration was difficult and painful and a dry cough occurred but at the end of an hour or so he was able to descend three flights of stairs and walk to his work. In the evening he returned and walked upstairs but experienced shortness of breath and the next day he was unable to get up.

It is in the nature of the condition that the symptoms grow progressively worse after the amelioration that follows the onset. This is due to the increase in intrathoracic pressure. The physical symptoms are those of any pneumothorax.

The authors have noted three varieties in the form of the pulmonary collapse. In the first the lung appears on roentgen examination only slightly compressed and its lobes are clearly outlined. The air bubble is largest at the level of the apex. In this type the pneumothorax is not extensive and is already in retrogression. In the second type the lung is flattened vertically along the hilum. In the third type it is retracted around the hilum and is reduced to a more or less rounded or bosselated mass.

In the cases reported the intrapleural pressure was not greatly elevated and was not in proportion to the degree of collapse of the lung or the dyspnea. The air was absorbed spontaneously in from six to twenty days. In several cases the authors aided absorption by evacuating some of the air after a few days.

Recurrence is fairly frequent but did not occur in any of the authors' cases.

The diagnosis is not always as easy as might be expected. In one of the authors' cases the stump of the lung was mistaken for a lung tumor. Among the objective signs, the bell sound is of most importance, tympany also is practically constant. Amphoric souffle and metallic ringing may be lacking.

The treatment is complete rest. If the dyspnea does not decrease the intrapleural pressure should be measured. The authors evacuated the air very slowly, without aspiration when the pressure was above +5 and stopped the evacuation when the pressure came to an equilibrium between zero and +5. The Kuss water manometer was used. After relief of the dyspnea the patient must be prevented from tiring himself and from resuming normal life too early. Roentgen examination is necessary to ascertain the condition of the collapsed lung.

FLORENCE A. CARPENTER

## ESOPHAGUS AND MEDIASTINUM

Jackson C. Diseases of the Esophagus. Angioneurotic Edema, Urticaria, Serum Disease and Herpes. *Arch. Otolaryngol.* 1932, xi, 327.

The first case reported by the author was that of a woman who complained of difficulty and pain in swallowing, and retrosternal pain extending through to the back which had developed the day previously. Four days previously she had been seized with violent abdominal pain associated with tenesmus, a white painless swelling of the right hand and swelling of the upper lip, the lower lid of the right eye and the tip of the tongue. On roentgen examination the lumen of the thoracic esophagus was found to be very small. Esophagoscopy examination showed the lumen to be almost completely occluded in the midthoracic portion by firm swollen bleeding nodules springing from the wall of the esophagus. When a second roentgen examination and esophagoscopy examination were made two weeks later, the esophagus was found entirely normal. On account of the transient character of the lesions and the angioneurotic edema, the diagnosis of angioneurotic edema of the esophagus seemed justified.

The second case reported was that of a woman with a history of asthma and urticarial attacks who suddenly became unable to swallow and simultaneously developed an eruption of intensely itchy white wheals on both sides of the front of the chest, the back and the left side of the face. Roentgen examination showed complete obstruction of the esophagus about 6 cm. above the diaphragm and esophagoscopy disclosed at that point a firm white nodular swelling of the walls which made impossible even the passage of an esophagoscope with a smaller lumen. When the two examinations were repeated a week later they showed the esophagus to be perfectly normal. Because of the reaction of the esophagus to the passage of the esophagoscope at the first examination by the formation of a white ridge surrounded by reddened mucosa and because of the presence of urticaria, the diagnosis of urticaria of the esophagus was made.

The third case reported was that of a boy who developed complete obstruction of the esophagus four days after the injection of a prophylactic dose of diphtheria antitoxin and at the same time presented a typical urticaria over the front of the chest and

both sides of the face and marked swelling of the tongue. Roentgen examination showed complete closure of the œsophagus, and bronchoscopy revealed firm, white, nodular masses which seemed integral with the œsophageal wall at the level of the top of the aortic arch. When the examinations were repeated ten days later, the œsophagus was entirely normal. Because of the urticaria and the history of serum injection, the transitory obstruction was considered part of the picture of serum disease.

The fourth case reported was that of a woman who complained of pain, discomfort, and pressure in the midthoracic region and difficulty in swallowing, and gave a history of frequent dilatations for "cardiospasm." Esophagoscopy examination revealed chronic œsophagitis, especially in the lower third of the thoracic portion. In the midst of this chronic inflammatory area, surrounded by a bright red zone showing no infiltration, there was a superficial ulcer about 12 mm in diameter. The hiatal pinchcock was abnormally patulous. A tentative diagnosis of peptic ulcer was made and a 5 per cent solution of silver nitrate applied.

A third esophagoscopy examination revealed only a trace of the chronic œsophagitis in the lower third part of the œsophagus. About a week later the patient complained of a burning sensation back of the midsternal region on swallowing. The food seemed to pass a sensitive spot, and the burning lasted for an hour or two.

A fourth esophagoscopy examination revealed a ridge like elevation of inflamed mucosa in the lower third of the thoracic œsophagus but not at the site of the former ulcer. Two blebs were seen. The area on the summit of the ridge was occupied by a grayish white adherent exudate, while the base of the ridge on each side was red.

At a fifth esophagoscopy examination the site of the ridge appeared as a flat, eroded, bleeding streak. A twelfth examination showed the œsophagus to be normal. After the twelfth examination, the patient remained well for a month. At the end of that time she developed difficulty in swallowing again and experienced a severe pain in the right leg. A few days later the leg was covered by a herpetic eruption. The eruption and the evanescent character of the œsophageal lesion led to the diagnosis of herpes of the œsophagus.

WILBUR BAILLY, M.D.

Eggers, C. Carcinoma of the Thoracic Portion of the Esophagus. *Surg., Gynec. & Obst.*, 1930, 1, 630.

Torek reported his first successful resection of the thoracic portion of the œsophagus for carcinoma sixteen years ago. Progress in this field of surgery has been slow because the patients are usually not seen by the surgeon until the condition is beyond the operable stage and are usually in poor condition, having developed emphysema, myocarditis, arteriosclerosis, or nephritis. Even in the most favorable cases the operation is formidable.

In the case reported by Eggers, the growth was of the cauliflower type and gave rise to symptoms

early. Operation was performed seven months after the onset of symptoms. Exposure was obtained by division of the fifth, sixth, and seventh ribs and the use of a rib spreader. The œsophagus was divided below the tumor and the lower stump was inverted. After careful attention had been given to the mediastinum, the tumor and œsophagus were removed through an incision anterior to the sternocleidomastoid muscle. Drainage was established through a stab wound in one of the lower posterior intercostal spaces into which a  $\frac{3}{4}$  in rubber tube was inserted. On the seventh day the patient was allowed out of bed and a rubber tube was inserted into the stump of the œsophagus and connected with the gastrostomy tube.

In spite of the later development of a metastatic tumor of the neck, the result is to be regarded as successful.

Most important in the surgery of œsophageal cancer today is the establishment of the feasibility of successful operative removal. Gastrostomy is the operation of choice with most surgeons when the patient is unable to swallow, but is only palliative. If the tumor can be removed a great deal has been gained. If, in addition, mastication and deglutition can be reestablished through a rubber œsophagus outside of the body, the result is still more satisfactory, but the ideal is the direct internal connection between the stump of the resected œsophagus and the stomach.

E. S. PLATT, M.D.

Kimigasa, S. Functions of the Cortex and the Medulla of the Thymus Especially Their Relation to the Sexual Glands. *Keio J. Med.*, 1930, 1, 1.

The investigation herewith reported dealt with (1) the physiological development and degeneration of the cortex and medulla of the thymus, (2) the relationship to one another of the cortex and medulla of the thymus, the sex glands, and the anterior lobe of the pituitary gland in their endocrinal functions, (3) the variation in the proportions of the cortex and medulla of the thymus of the albino rat after transplantation of a sex gland, and (4) the variation in the proportion of the cortex and medulla of the thymus of the female albino rat prematurely matured by the transplantation of the anterior lobe of the pituitary gland.

It was found that the rate of increase in the weight of the thymus is greatest during puberty and next greatest in the period from puberty to the time at which the sexual organs reach their maturity. Therefore complete maturity of the sexual organs is reached while the thymus is functioning most actively.

The theory that the thymus atrophies at about the age of puberty is incorrect. In the albino rat the first sign of atrophy appears about ten days after the sexual system has come to full maturity.

The relative weights of the cortex and medulla of the thymus vary with age. When the thymus is undergoing physiological atrophy or an acute



atrophy due to weakness the cortex shows a greater loss of weight than the medulla.

The thymus of the castrated albino rat grows as large as that of the normal rat, but shows a marked difference in the proportion of cortex to medulla the proportion of the "mature type" being maintained even at a time when the thymus of the normal animal would show the proportion of the puberty or maturity type. In the castrated animal the proportion of cortex to medulla of the thymus is quite different from that in the normal animal, the medulla remaining undeveloped even at a time corresponding to the period of puberty in the normal animal and the cortex degenerating but slightly at a time corresponding to that of the old type.

Sex gland tissue subcutaneously implanted in the infant albino rat accelerates the development of the medulla of the thymus and arrests the development and accelerates atrophy of the cortex. The anterior lobe of the pituitary gland of a mature female albino rat subcutaneously implanted in a young female rat and causing premature development of the sex organs of the young rat accelerates the growth of the medulla of the thymus although the growth of the cortex is arrested.

The endocrinal function of the cortex of the thymus is different from that of the medulla. The former has a restrictive action and the latter an accelerative action on the sex glands. Thus the

function of the thymus varies according to the proportion of cortex to medulla. When the proportion of cortex is high (78 per cent), the development of the sexual organs is arrested and when the proportion of medulla is high (23 per cent), the development of the sexual organs is accelerated. The cortex of the thymus is antagonistically influenced by the hormone of the mature sex glands. The development of the medulla of the thymus is both accelerated and strengthened by the action of the hormone of the sex glands.

When the anterior lobe of the pituitary gland is implanted in a castrated immature female animal the cortex of the thymus atrophies and the development of the medulla is in turn accelerated and strengthened the effect of the implant upon the cortex and the medulla being similar to that of the sex glands.

The cortex of the thymus and the sex glands are antagonistic to each other while the medulla of the thymus and the sex glands are synergistic. However, the author does not claim that this is true during the whole life of the animal.

From the point of view of the development of the sex glands the interrelationship of the cortex and medulla of the thymus may be regarded as antagonistic and similar to the interrelationship of the cortex and medulla of the suprarenal glands first propounded by Tokumitsu.

J. FRANK DOUGNEY, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Carnett, J. B. Intercostal Neuralgia of the Abdominal Wall *Colorado Med* 1930, xxvii, 72

Acute or chronic abdominal pain and tenderness are frequently located in the anterior abdominal wall. Failure to recognize this fact has led to many fallacious diagnoses. Numerous cases of spondylitis with abdominal pain have been operated upon for visceral disease.

The predominant symptoms of parietal neuralgia are pain and tenderness varying in degree from an extremely severe stabbing pain to a mild ache. As a rule the pain is increased on physical exertion. The tenderness is usually most marked in the regional nerve area.

Attacks of abdominal intercostal neuralgia simulating various acute intra abdominal lesions are due most commonly to toxæmias, particularly those following infections of the upper respiratory tract.

Radicular pains suggesting acute abdominal conditions may be caused also by tumors and other lesions of the spinal cord, trauma especially vertebral fractures, spinal arthritis, excessive lordosis, scoliosis, Pott's disease, syphilis, and metastatic neoplasms.

WILLIAM E. SHACKLETON, M.D.

Miller, E. M. Two Cases of Strangulated Hernia Due to Ruptured Appendix *Surg Clin North Am*, 1930, x, 375

The first case reported by the author was that of a man sixty nine years old who presented signs and symptoms of a strangulated right inguinal hernia. At operation, the hernial sac was found to contain oedematous omentum which was covered with plastic exudate. A right rectus incision disclosed a ruptured appendix and localized peritonitis. Appendectomy with drainage was followed by recovery.

The second case, also that of an elderly male, showed a mass having the appearance of a right femoral hernia. At operation, the mass proved to be the sac of a femoral hernia which was filled with pus. The pus had entered the sac from a large pelvic abscess secondary to rupture of the appendix and general peritonitis.

EARL GASIDE, M.D.

Curtis, A. H. Adhesions in the Right Upper Quadrant *J Am Med Ass*, 1930, xciv, 1221

Curtis makes a thorough exploration of the entire peritoneal cavity in all cases in which the abdomen is opened. During the past three years he has often found "violin string" adhesions between the anterior surface of the liver and the anterior abdominal wall and has been impressed with the frequency of co-existing gonorrhœal disease of the fallopian tubes in these cases.

He states that patients with such adhesions are often thought to have diaphragmatic pleurisy, colitis, or gall bladder disease. During the past two years he has seen more than a dozen patients with adhesions of this type. He believes that gonorrhœal disease is not so frequently limited to the pelvis as has been assumed heretofore, and that the possibility of adhesions between the liver and abdominal wall should be considered in the cases of female patients presenting symptoms of gall bladder disease or pleurisy.

EARL GASIDE, M.D.

## GASTRO-INTESTINAL TRACT

Anzilotti, A. Volvulus of the Stomach (Sul volvolo gastrico) *Arch Ital di chir*, 1930, xxvi, 1

The author reports two cases of volvulus of the stomach. He distinguishes three clinical types of the condition: the acute, the intermittent and the chronic. Important causes are overfilling of the stomach, ptosis, aerocolia, and hyperperistalsis. Hyperperistalsis may be so acute that the physiological movement of torsion made by the stomach in emptying is increased.

Four characteristic roentgen signs of volvulus of the stomach are: unusually slow and difficult filling of the organ, displacement of the pylorus to the left, diffusion of the peristaltic wave toward the left, and an increase of the air bubble of the stomach with intense aerocolia.

The only treatment is surgical. As a rule gastroenterostomy, with or without Perthes' operation, is the method of choice. In acute cases, simple detorsion may give good results.

ALFRED G. MORGAN, M.D.

Hill, L. L., Jr. Syphilis of the Stomach *Am J Syphilis*, 1930, xiv, 199

The author reviews the clinical and X-ray signs of gastric syphilis and reports 5 cases of this condition which were found among 228 cases of gastric lesions. The importance of syphilis of the stomach complicating some other gastric lesion is pointed out. Hill states that whenever any evidence of syphilis is noted, specific therapy should be tried as it may be followed by immediate improvement.

M. HERBERT BARKER, M.D.

Pescatori, F. Brunner's Glands and Their Relation to the Genesis of Gastroduodenal Ulcer (Le ghiandole del Brunner in rapporto alla genesi di ulcere gastroduodenali) *Arch Ital di chir*, 1930, xxvi, 71

The author reports three cases of operation for gastroduodenal ulcer originating from ectopic Brunner's glands in the stomach or from these glands in

their normal site in the pylorus and duodenum. The diagnosis was confirmed by histological examination. Pescatori believes that the hyperplasia of the glands is congenital. He discusses the hypothesis that there may be an accumulation of gland bodies instead of hyperplasia of one body and reviews the anatomical and clinical characteristics of the resulting ulcers. He has noted the signs of pylorospasm long before the clinical and roentgen signs of gastric ulcer were manifest.

He attributes the ulcer formation to a foreign body effect exerted by the Brunner glands which results in a marked fibrosis that fixes the gastric mucosa to the muscle layer causing local abolition of the normal function of the submucosa and thereby exposing the mucosa to direct traumatism.

AUDREY G MORGAN, M.D.

Saunders E W and Cooper, M A. The Serological and Etiological Specificity of the Alpha Streptococcus of Gastric Ulcer. A Bacteriological Study. *Arch Int Med* 1930, LV, 341.

Following a review of the literature supporting the bacteriological theory of peptic ulcers the authors report the results of cultures of aseptically removed ulcers of the stomach, duodenum and jejunum. The cultures were made deep in 15 c cm. of a 0.5 per cent semi solid hormone agar medium (Huntton) with a hydrogen ion concentration of pH 7. In from three to six days there was a profuse growth of an organism which was regarded as an alpha streptococcus. It was found that serum from patients with proved gastric, duodenal, and gastrojejunal ulcers contains specific agglutinins for this type of alpha streptococcus.

The authors suggest that peptic ulcer may be caused by such a streptococcus of low virulence which progresses only in the mucous membrane and in the necrotic surface of the crater. They assume that the underlying layers of the stomach are unable to withstand the continual action of the gastric contents as well as the mucous membrane and that healing is prevented by spasm of a fixed area. They believe that the organism may remain quiescent in the mucous membrane for varying lengths of time depending upon the patient's resistance and resumes its activity when other infecting agents are prevalent.

They are now directing their efforts toward determining the source of the infection and the development of a vaccine therapy for peptic ulcer.

M HERBERT BARKER, M.D.

Vallone D. Anaphylaxis and Gastric Ulcer (Anafilassi e ulcera gastrica). *Arch ital di chir* 1930, XLV, 535.

In studying the cause of gastric ulcer the author made injections of horse serum into sensitized dogs and rabbits. He found that the lesions differed in intensity in the two species. Dogs were sensitized less easily than rabbits, but presented more serious signs of shock. The symptoms were polypnea,

exhaustion, and fecal and urinary incontinence. They were always temporary, but were of longer duration in the dogs than in the rabbits. Some of the dogs died from shock. Some of the rabbits on the other hand developed serum cachexia from which they died.

When irradiated serum was used the shock and the lesions of the stomach were more serious than when non irradiated serum was employed. When the coronary artery of the stomach was ligated and the injections were made into the region supplied by it, the lesions were no more serious than in the other cases. This observation was in agreement with the results of Torraca, who found that, in dogs, ligation of the coronary artery alone does not cause lesions of the stomach wall.

The author's experiments show that anaphylactic sensitization slows the coagulation time of the blood from a few minutes in rabbits to several hours in dogs. Vallone used this change to determine the degree of sensitization, for he found that the degree of retardation of coagulation and the degree of sensitization are parallel.

In the case of a rabbit near the end of pregnancy, abortion occurred, the pregnancy was normal until an advanced stage of sensitization was reached.

The ulcers produced in the stomach walls of the animals by anaphylactic sensitization did not show the histological characteristics of chronic peptic ulcers. Wounds in the walls of the stomachs healed more slowly in the sensitized animals than in the control animals. Lesions of the ulcerative type were not so frequent as lesions with hemorrhage, edema, atrophy, and hemorrhagic necrosis which were not limited to the site of the injection but were diffuse throughout the wall of the stomach.

If lessons like those seen in the experiments are formed in the stomach walls of man sensitized to different antigens they will furnish a point of least resistance on which the gastric juice can act because of (1) a change in the mucus secretion which Kaufmann says is the chief factor in the causation of ulcer, (2) a change in the constitution of the gastric cells, which Fermi says prevents the cells from combining easily with enzymes, or (3) a lack or scarcity of antipepsin in the changed cells. It is believed by some that the digestive action of the gastric juice is prevented by antipepsin. Another possible factor in the presence of anaphylaxis is a change in the antipepsin and antirennin action of the blood. The author did not study the antipepsin and antirennin capacity of the blood in his experiments, but believes it would be interesting to see whether it undergoes a change with the change in the coagulation time of the blood. AUDREY G MORGAN, M.D.

Gaudier H. The Clinical History of a Case of Denervation of the Stomach for Ulcer (Histoire clinique d'un cas d'énervation gastrique pour ulcus). *Bull et mém Soc nat de chir* 1930, LV, 182.

A man aged forty years had had digestive disturbances for two years which had become pro-

gressively more severe. His family and personal history were negative, and he presented no evidence of syphilis, tubercles, or other nervous lesions. Acid regurgitations and a burning sensation in the pit of the stomach had been followed by gastric pain occurring immediately after meals and lasting two or three hours.

On physical examination the patient was found emaciated and the epigastric region distended and tender. There was no blood in the vomitus or stools. Roentgen examination showed, as the sole abnormality, a slight deformity below the cardia, which suggested a small superficial ulcer. The total acidity and hydrochloric acid values were high.

At exploratory operation a slight lack of suppleness in the wall of the stomach was noted over an area the size of a 50-centime piece, a little below and to the right of the cardia. There was no callus or injection of the serosa. As Gaudier believed the lesion to be a very superficial erosion which did not warrant resection, he decided to denervate the stomach by the Laterjet-Wertheimer technique. This was done completely and rapidly and was followed by a change of the color of the stomach resembling the effect produced by periarterial sympathectomy.

The symptoms were immediately relieved. On the third day after the operation the patient was up and was able to take milk and cooked meat. He was put on a rigid diet and after a few weeks returned to his work. When he was seen again two months after the operation a test meal showed the total acidity and the hydrochloric acid to be practically normal, he had gained weight and had no complaints, the stomach region was no longer tender, and digestion seemed to be good.

A month later (three months after the operation) he was readmitted to the hospital in a critical condition with the diagnosis of generalized peritonitis probably due to perforation of the stomach. For two days he had had no appetite and had felt fatigued, but that morning he had gone to work (mill work) as usual. On leaving work at 2 o'clock, he had felt a sudden pain in the stomach region. This was followed by bilious vomiting. No blood was apparent in the vomitus. The stomach rapidly became distended. No stool or gas was passed.

Laparotomy performed that evening at 7 o'clock revealed in the juxtacardiac region of the stomach a callous plaque the size of the palm of the hand, showing in its center a punched out hole the size of a 1 franc piece, through which the gastric contents were emptying. As the patient's condition made resection impossible, the orifice was closed with sutures. The sutures were introduced at a distance as the immediate tissue was extremely friable. Coffee drainage was established.

The patient was greatly shocked, but recovered. Fluid was administered by the Murphy drip and subcutaneously, and for six days no water was given by mouth. Gaudier is uncertain whether or not he will do a resection later. He raises the ques-

tion whether the denervation, while ameliorating the clinical symptoms, may not have activated the anatomical lesion. FLORENCE A. CARPENTER

Bolton, G. The Relation of Medicine to Surgery in the Treatment of Gastric and Duodenal Ulcer. *Brit. M. J.*, 1930, 1, 727.

There is no pathognomonic symptom of gastric or duodenal ulcer. These lesions give rise to dyspepsia which varies in its type according to the situation of the ulcer and is indistinguishable from similar dyspepsia due to other causes.

Each ulcer has a definite life history, and the patient may appear for diagnosis at any stage in the origin, evolution, or cicatrization of the lesion. The acute ulcer arising as a localized lesion usually heals normally. However, in some cases healing may be delayed, and in others it may be arrested, the lesion being converted into a chronic ulcer.

If medical treatment is to be successful it must be begun early and must be thorough. If all ulcers were recognized early and treated carefully there would be no chronic ulcers for surgeons to operate upon. In about 60 per cent of cases, the pain rapidly ceases and the patient becomes convalescent under any of the recognized methods of ulcer treatment. If the pain does not subside, some complication is present or the ulcer is chronic. An acute ulcer of moderate size takes from two to three weeks to heal.

About 88 per cent of relapses occur within the first two years. Not more than 10 per cent of ulcers existing for five years are cured.

All of the prevailing medical treatments aim at facilitating evacuation of the stomach and reducing the acidity of the gastric contents. Delayed emptying and hyperchlorhydria prevent cicatrization.

The author begins his ulcer treatment with feedings of 7 oz of citrated milk at intervals of three hours. Two hours after each feeding he gives alternately the following alkalies: (1) 10 gr of magnesium oxide and 15 gr of sodium bicarbonate, and (2) 15 gr of sodium bicarbonate. If there is a diarrheal tendency, he substitutes 10 gr of calcium carbonate for the magnesium oxide.

The chronic ulcer is the type which needs surgical care. An ulcer which has been present for five years usually requires operation for cure.

The author draws the following conclusions:

1. Gastric and duodenal ulcers are primarily medical diseases.

2. The majority of ulcers will heal under medical treatment if the treatment is begun at an early stage of the malady.

3. For the rest of his life the patient must obey the dietetic and other rules laid down for him after the conclusion of treatment, otherwise he is liable to a relapse, especially if the treatment was not employed at a comparatively early stage of the disease.

4. An uncomplicated ulcer should not be subjected to operation until it has been proved incurable by medical treatment.

5 If the lesion is proved incurable by medical treatment as regards either healing or recurrence, operation is indicated

6 In addition to healing or removing the ulcer, surgery is expected so to alter the gastric mechanism that recurrence is impossible but as this result is at present uncertain the gastric contents should be examined after every operation and unless achlorhydria is established the patient should be referred back to the physician for medical treatment

7 More attention should be paid by physicians to the treatment of dyspepsia and the early diagnosis of ulcer When the presence of an ulcer is recognized adequate medical treatment should be instituted at once

CHARLES F. DUBOIS M.D.

**Guibal P. Pylorogastric Resection for Perforated Ulcer and Cancer. Four Cases (Resection pylorogastrique pour perforation d'ulcère et de cancer: quatre observations.)** *Bull. et mém. Soc. nat. de chir.* 1930 11: 214

Case 1 was that of a man forty five years of age who was seized while at work by sudden sharp pain in the epigastrium so severe as to cause him to fall to the ground During the previous six months he had had vague pains in the epigastrium There was no emaciation Roentgenography six months previously was negative

When the patient was examined by the author he was in great pain with his knees flexed and with board like rigidity of the abdomen Operation was performed fifty three hours after the occurrence of the perforation There were several spoonfuls of liquid free in the abdominal cavity The stomach was adherent to the liver The adherent portion was covered by a membrane In the center of the membrane which corresponded to the center of the lesser curvature near the small omentum there was a perforation the size of the little finger This was surrounded by an indurated area the size of the palm of the hand and 1 cm. thick which extended over to the greater curvature forming a fold which simulated an hour glass stomach A pylorogastric resection was done a 1/2 tube placed in the jejunum according to Polya's method The abdominal wall was sutured with bronze wire without drainage

Microscopic examination disclosed a glandular epithelioma

Convalescence was uneventful but ten months after the operation the patient began to lose weight and to show enlargement of the liver and a year after the operation he died in a cachectic condition He had no gastric symptoms after he was operated upon

Case 2 was that of a man of sixty years who for three years had had typical ulcer pain which at times was associated with melena The last attack was more severe than the others At operation performed under local anesthesia ten hours after the last attack the pyloric portion of the stomach was found buried under and adherent to the liver and to contain a pea sized perforation As the induration in-

cluded the entire pylorus resection was necessary Pylorogastric resection was done according to the Polya method and the abdomen was closed without drainage The portion removed contained part of the first division of the duodenum the pylorus and the lesser curvature and showed an old callus ulcer with a perforation at its base

After the operation the patient vomited solid foods but not liquids The vomiting became more frequent and of a bilious character A second operation performed a month after the first one revealed a plastic adhesive peritonitis encircling the stomach adherence of the omentum to the liver, abdominal wall and the site of the first operation, and obstruction of the efferent jejunal loop As it was impossible to free the adhesions an anterior gastro enterostomy was performed The patient made an uneventful recovery

The third case was that of a man forty two years of age who had suffered with periodic attacks of epigastric pain and hyperchlorhydria for several years In the last attack which was sudden, the pain was extremely sharp Operation performed under local anesthesia seven hours later showed a markedly indurated pylorus with a small perforation near the duodenum It was found necessary to do a resection and a Polya anastomosis The abdomen was closed without drainage When the patient was seen again three years later he reported that he was entirely free from symptoms

Case 4 was that of a man of fifty eight years who had been suffering from gastric distress periodically for the past fifteen years On two occasions it was associated with melena The last attack came on suddenly with the typical excruciating pain of perforation Operation performed under local anesthesia seven hours later disclosed free fluid in the abdominal cavity a perforation in the second part of the duodenum which was adherent to the pancreas and a large irreducible inguinal hernia of the omentum A resection beginning at the right and ending at the duodenum was done The tissues were friable and it was very difficult to maintain hemostasis A Polya anastomosis was done and the opening in the mesocolon sutured The abdomen was sutured without drainage

The patient made a good immediate recovery from the operation, but on the fifteenth day developed symptoms of high intestinal obstruction At reoperation it was found that the first jejunal loop of the gastrojejunal anastomosis had herniated through the suture line in the transverse mesocolon The hernia was reduced and the opening closed On the tenth day after the operation a clear liquid began to escape from the wound This was thought to be due to a duodenal or pancreatic fistula The abdominal wall became eroded and some of the sutures were loosened by the irritating discharge Sixteen days later the discharge had practically ceased and it was believed that the patient was completely well However, on the eighteenth day, he was seized with a syncopeal attack and vomited

up  $\frac{1}{2}$  liter of pure blood. This was repeated in two hours, and death resulted eight hours later from an unusually large hemorrhage. Autopsy was not permitted, but the author believes that the hemorrhage had its origin in an area injured by a de Martel stomach clamp.

The prognosis in cases of perforation depends on the time interval elapsing before intervention, whether or not there are adhesions to the perforation which prevent free escape of the gastric contents, and whether or not the stomach was full or empty at the time of the perforation. When the general condition permits and the local conditions are suitable, a pylorogastrectomy is advisable. Otherwise, more conservative procedures such as suture of the perforation, closure with an omental flap, excision of the indurated area, and gastroenterostomy should be employed.

In the discussion, BASSER emphasized that there are numerous factors which may enter into the prognosis, but the most important is the time at which operation is performed. He stated that on several occasions he has operated upon and cured patients with perforations in whom the entire stomach contents had been emptied into the peritoneal cavity.

JACOB E. KLEIN, M.D.

**Bloom, C. J. Intestinal Polyposis in Childhood. A Report of Three Cases and a Survey of the Literature. *New Orleans M. & S. J.*, 1930, LXXII, 647.**

The first case reported was that of a boy three years of age who had pertussis and repeated attacks of tonsillitis and developed periodic attacks of fever and later mitral regurgitation. The tonsils and adenoids were removed. Subsequently, constipation developed and blood appeared in the stools. After an attack of pain in the abdomen associated with nausea, bright red blood and a pedunculated fleshy tumor mass the size of a walnut were passed. Microscopic examination showed the tumor to be a mucous polyp composed largely of granulation tissue covered by scanty epithelium. After one more attack of bleeding from the bowels, the child recovered and remained well.

The second case reported was that of a four-year-old boy with a history of bloody bowel movements for fifteen months. The urinalysis and feces examination were essentially negative and the blood count was normal. A tentative diagnosis of mucous polypus was made. Later the family reported that the patient passed a fleshy mass, but it was not recovered for microscopic examination.

The third case was that of a girl four years of age who had passed bloody stools for a year. X-ray examination of the gastrointestinal tract revealed pylorospasm, spasticity of the colon, and caecal and colonic stasis. There were no parasites in the feces. The secondary anemia was not marked. Proctoscopic examination was about to be done when the child developed prolapse of the rectum with the protrusion of a pedunculated polypus through the

anus. The tumor was the size of a hickory nut, reddish gray, vascular, and fleshy. The pedicle was  $\frac{1}{2}$  in long and of the diameter of a lead pencil. The tumor mass was surgically removed. Since the operation, the child has remained well and there has been no bleeding.

At the present time the nomenclature of tumors of the intestinal tract is very confusing. Various theories and groupings have been suggested. Virchow first described the disseminated form as "colitis polyposa cystica." Hauser calls the condition "polyposis intestinalis adenomatosa." He believes that simple polypi often become malignant. Drueck classifies the majority of rectal polypi with adeomata. In children there is usually a single adenoma or at most only three or four such tumors varying in size from that of a cherry to that of a hen's egg. Frequently the polypus is pedunculated. It often resembles a red raspberry. It consists chiefly of connective tissue but contains also a small amount of glandular and epithelial tissue. This type of adeoma usually occurs in children under twelve years of age.

In some cases, definite symptoms are wanting. The symptoms often vary within wide limits. If the polypus is located in the rectum there may be tenesmus and bleeding. Secondary anemia and cachexia have been observed. Even a fatal hemorrhage may result. If the tumor is recovered in the bowel movements, the diagnosis is established. A proctoscopic examination will often clear up the diagnosis. Rectal prolapse and the passage of blood and mucus in the stool are suggestive.

Benign tumors of the bowel are more common than is indicated by the reports in the literature. An intestinal polypus is often the exciting factor in rectal prolapse or intussusception. The nomenclature of benign tumors of the bowel needs revision. Polypi should be removed with cauterization of the base to prevent recurrence and malignancy.

JOHN W. NUZZO, M.D.

**Draper, J. W., and Johnson, R. K. Chronic Intestinal Obstruction of the Segmental Type. Further Studies in Omental Pathogenesis. *J. Am. M. Ass.*, 1930, XLIV, 683.**

Johnson concluded from previous roentgenoscopic study that partial pressure obstruction of the caudal intestine serves in some way to produce dilatation and functional disturbances of the cephalad intestine, especially the duodenum. Support for this observation was found in the work of Barber. Draper has for many years observed experimental duodenal obstruction in dogs, but in common with others is unable to explain the nature of the toxins formed or to account for the early death which usually occurs. The toxins are endo enteric and exo enteric and are present in both acute and chronic obstruction.

The authors classify chronic intestinal stasis, or constipation, into three types: (1) habitual constipation, (2) physiological constipation, (3) partial

obstruction primarily organic and secondarily physiological. In the last type constipation is not a constant finding, occasionally diarrhoea occurs.

Constipation may become progressive and cease to yield to diet and other ordinary measures but in some cases it may be only relative, the chief symptom being vague abdominal distress. Attacks of diarrhoea may occur regularly following the ingestion of food. To the authors this suggests stimulation of a physiologically abnormal duodenum.

Pressure obstruction of the colon in man is analogous to experimentally produced segmental obstruction in the dog. Segmental colonic obstructions are caused by variations of the omentum and peritoneum and can be diagnosed roentgenoscopically. The pressure defects are ordinarily found near the splenic flexure. The pressure results in ischaemia and tissue destruction. Simple severance of congenital bands is insufficient. The authors recommend excision of the malformed and diseased omentum.

E. A. GARDNER, M. D.

Moiroud P. Typhoid Perforation Operated upon After Eighteen Hours Exteriorization. New Perforation on the Twentieth Day in the Exteriorized Loop. Cure (Perforation typhique opérée à la dix-huitième heure extériorisée nouvelle perforation au vingtième jour sur l'anse extériorisée). *Bull. et mém. Soc. de chir.* 1930 151: 60.

On the thirteenth day of a particularly severe attack of typhoid fever a child of eleven years presented the syndrome of perforation. Five hours previously there had been a change in its condition and a physician had judiciously ordered flushing of the intestine. Three such lavages had been administered the last with no results. At operation performed under ethyl chloride anesthesia an oblique incision was made in the right iliac fossa. When the peritoneum was incised manifestations of general peritonitis were evident and considerable yellowish flocculent intestinal contents escaped. On the convex border of the last loop of ileum

5 cm. from the caecum, a perforation the size of a pinhead was found. There were no adhesions. The involved intestinal loop was exteriorized for from 18 to 20 cm. of its length and two loops were fixed to the parietal peritoneum. A Nelaton catheter was then passed through the perforation for external evacuation of the intestinal contents; a suprapubic incision made and drainage of the peritoneal cavity established. Two days after the operation there were signs of pulmonary congestion. The suprapubic drain was removed after forty-eight hours as the peritoneal symptoms rapidly subsided. Later bed sores developed and a crural ulcer required incision. Gradual recovery resulted.

Eighteen days after the operation a perforation occurred in the upper portion of the exteriorized loop 4 cm. from the first perforation. However, after some difficulties due to irritation of the skin about the wound discomfort induced by the crural abscess, and herniation of the intestinal mucosa

gradual recovery occurred. On the fiftieth day after the operation the intestine was returned to the abdominal cavity. A slight fistula which remained became healed in three months. A slight ventral hernia was operated later without touching the intestine. Thereafter the child had no further intestinal disturbances.

In the discussion MOURE said that the seriousness of a typhoid perforation is due to the fact that the entire intestinal wall is infiltrated and edematous and the infection spreads to the end of the ileum. Most typhoid perforations which come to operation are fatal, at the time of operation the patients are usually in a moribund condition. Some of those who recover from the operation die of peritonitis, others who seem to recover from the operation develop a new perforation or a complication such as myocarditis as a perforation is usually an indication of a severe type of typhoid fever. The majority of such patients seen by Moure have died. However, in one case in which he sutured the perforation and made a caecal fistula recovery resulted. Moure believes that the caecal fistula was an important factor in the recovery. He obtained a favorable result also in a case of volvulus of the sigmoid in which he did a resection and made a caecal fistula. On several occasions he made a caecal fistula in the presence of a peritoneal syndrome with distention, always with good results. In this connection he called attention to the improvement in the peritoneal symptoms following appendicitis when a spontaneous faecal fistula develops. He believes that a caecal fistula should be made systematically in the treatment of typhoid perforations. The direct drainage of the small intestine prevents secondary fermentation especially when there is blood in the intestine and places the intestine at rest. Moreover there is a logical indication for the formation of a caecal fistula in every severe case of typhoid fever associated with persistent distention.

MOCQUOT stated that he attributes the cure to the technique of the operator more than to the particular procedure employed. He cited the case of a man he had recently operated upon twenty hours after the onset of perforative symptoms. A perforation was found in the last loop of the ileum. This was sutured, the intestine returned to the abdomen, and the abdomen closed without drainage. The patient readily recovered from the perforation but did not recover from the typhoid fever until after a relapse. In Mocquot's opinion, the prognosis of typhoid perforation depends upon the time of operative interference and the general progress of the typhoid fever itself.

MAUCLAIRE emphasized the importance of the operative technique. He stated that he had operated several times for intestinal perforation reinforcing the suture with an omental graft, but in every instance the result was unsuccessful because the operation was done too late.

CADEVAT reported a case of typhoid perforation in which recovery followed exteriorization of the

perforated loops. He does not see the necessity for making a cecal fistula routinely although he is well aware of the advantage of the procedure in grave peritonitis. He believes that the prognosis of typhoid perforation depends less on the technique of operation than on the promptness with which operation is performed after the perforation.

MOORE stated that he prefers to make a cecal fistula instead of an ileal fistula because the former is easier to close. In favorable cases of typhoid he has found simple exteriorization of the perforation sufficient.

JACOB E. KLEIN, M.D.

**Christopher, F.** Necrosis of the Ileum Following Pelvic Inflammatory Disease. *Surg Clin North Am*, 1930, 5, 333.

The patient whose case is reported was operated upon for severe diffuse abdominal pain. As signs of periappendicitis were found the appendix was removed. The uterus and tubes were discovered to be bound down by dense adhesions and a loop of intestine was firmly adherent to the top of the uterus. After the loop of intestine had been liberated, it was found to be dark purple for a distance of about 8 in. Attempts to restore the circulation being unsuccessful, the involved portion was resected and a lateral anastomosis was done. Bilateral salpingectomy was then performed. The patient recovered.

WILBUR BAILEY, M.D.

**Hullsiek, H. C.** Adenomatous Polyps of the Colon and Rectum. *Minnesota Med*, 1930, viii, 229.

Adenomatous polyps make up by far the largest group of intestinal growths and are frequently found in children. Multiple polyposis is usually manifested in childhood or early youth. The incidence of malignancy in this condition is from 40 to 50 per cent. Forty six per cent of all benign growths in the intestinal tract and 63 per cent of adenomata are found in the rectum, hence well within reach of the examining finger. A common site for the development of adenomata is the anterior intestinal wall just proximal to the sharp fold marking the rectosigmoid junction. Since carcinoma is also often found at this point, it may result from polyp formation.

On digital examination, polyps are smooth and fairly hard and firm but not as firm as carcinoma. As a rule they are definitely pedunculated. As seen through the sigmoidoscope they are bright red, glistening round masses which sometimes are lobulated. They ooze blood freely when rubbed. Of the author's series of twenty five cases of single polyps, six showed carcinomatous change. In sixteen cases bleeding occurred. Other symptoms were irritation, a discharge, prolapse, bloody diarrhoea, a sense of incomplete evacuation, pain in the bladder, and obstruction. Jones is quoted as saying that the presence of blood in the stool is of even greater importance than the carcinoma itself as polyps often become carcinomata and proper treatment before they become malignant means permanent cure.

The author points out that rectal examination should be a part of every routine complete examination, certainly if any rectal symptoms are present, especially rectal bleeding. Adenomatous polyps should be considered distinctly pre-malignant growths and should be eradicated when seen. In some cases the polyp may be prolapsed, ligated, and removed under novocain relaxation of the sphincter and. When the polyp is situated high, the proctoscope may be used and removal effected with a cold snare drawn up slowly or with the use of a high-frequency snare to prevent postoperative bleeding.

MAURICE MEYERS, M.D.

**Bargen, J. A., and Rankin, F. W.** Multiple Carcinomata of the Large Intestine. *Ann Surg*, 1930, xc1, 583.

Cases of multiple carcinoma of the colon have been reported in which it was not recognized that polyposis preceded the carcinoma. Following a review of the work of previous investigators, including Fenger, Major, and Cabot, which showed that multiple malignant lesions may occur not only in the same person but also in the same organ, Bargen and Rankin report sixteen cases in which there was more than one carcinoma of the colon, each of a different origin. They state that while multiple primary malignant lesions in various tissues of one person have been frequently recorded, the occurrence of multiple malignant tumors in the same organ at the same or different times has rarely been observed. They believe that this fact has a distinct bearing on the treatment and prognosis. Polyps should be considered a sign of possible future malignant disease of the large intestine, but it is impossible to predict whether or not a given polyp will become malignant.

**Gerstley, J. R.** Appendicitis in Children. *Med Clin North Am*, 1930, viii, 1175.

In children the symptoms of appendicitis are extremely variable and the progress of the disease is rapid. The child may have a catarrhal appendix one day and a ruptured appendix the next. Appendicitis is the most common surgical disease in young children. Sixty per cent of all laparotomies on children are performed for appendicitis and 95 per cent of cases of peritonitis in children are due to that condition. Before the fifth year of age, 4 per cent of all deaths of children are due to appendicitis despite the fact that only 2 per cent of cases occur at that time of life.

In 6 per cent of the cases of children under five years of age there is a history of previous attacks, whereas in the cases of children between five and twelve years of age such a history is given in 30 per cent. The disease is twice as common in male children as in female children.

The chief symptom in children is pain. The pain is constant and prevents sleep. The child resents any change in position and will not sit up voluntarily. The pain differs from that occurring in the



adult In 20 per cent of Richter's 208 cases general abdominal pain was absent at the onset Pain in the right lower quadrant was present in only 80 per cent In 70 per cent it began on the first day The first effect of inflammation is irritation of the abdominal sympathetic The abdominal sympathetic in turn influences the spinal nerves of the same segment Hence the first pain is in the umbilical region and the skin innervated by these spinal nerves Later as the peritoneum becomes inflamed (in children this occurs rapidly) the pain becomes localized to the area of local peritonitis

Nausea and vomiting occur at the onset of the condition in about 80 per cent of the cases The temperature at the onset usually varies from 99 to 101 degrees F and is rarely more than 103 degrees The pulse rate is accelerated in all cases but particularly in toxic cases The leucocyte count though usually elevated is under no circumstances to be considered an index of the severity of the infection Constipation is a frequent symptom but diarrhoea occurs occasionally Painful urination and frequency are not uncommon

On physical examination the child may not appear acutely ill but may be pale He holds the abdomen quiet and breathes costally He usually resents manipulation of the right leg The cardinal signs are related to the abdomen Involuntary rigidity is present in fully 95 per cent of the cases Local tenderness is an extremely valuable diagnostic sign The author gains the child's confidence by examining the ankle When this is done the child relaxes his abdominal muscles Then taking a firm hold on the ankle the author shakes the child's body so as to jar the abdomen when the child will often place his hands over the sore spot in the abdomen in an attempt to steady it In all doubtful cases a rectal examination should be made

The onset of appendicitis is frequently confused with that of pneumonia Other conditions to be differentiated are gastro-intestinal colic, pyelitis, intussusception, inflammation of Meckel's diverticulum and peritonitis from other causes Cyclic vomiting and acidosis have been considered due to metabolic disturbance but patients with these conditions are frequently relieved by appendectomy

There is no complication more misleading than rupture of the appendix in the child After a period of discomfort and fever the child shows sudden improvement and for a few hours is free from symptoms Then with a rush comes the peritonitis When the physician sees the patient for the first time in such a period he must rely in his diagnosis chiefly on a carefully taken history and if abdominal pain and fever have been suddenly relieved he must be on his guard (LORR A COLLETT M.D.)

Raw S. Eight Hundred Consecutive Operations for Appendicitis *Brit M J* 1930 1 453

The author urges early appendectomy in appendicitis He gives the following 4 reasons for the frequent delay of operation

1 The patient does not summon the doctor soon enough

2 Textbook descriptions are frequently misleading as the symptoms they describe are late symptoms and practitioners are tempted to await the appearance of such symptoms before calling in surgical aid

3 The symptoms are frequently atypical because the appendix is by no means always in the normal anatomical position

4 It is extensively held and taught, that operation is unnecessary until palliative measures have failed and that surgery is inadvisable after the second day of the attack

Appendicitis is most frequent between the ages of twelve and twenty-five years The attack begins suddenly The first symptom is pain which is usually referred to the umbilicus Shortly after the onset of pain nausea or vomiting supervenes and is quickly followed by tenderness over the right iliac fossa These symptoms—pain, vomiting or nausea and local tenderness—in the order named are classical symptoms of appendicitis and alone justify the diagnosis Fever leucocytosis an increased pulse rate local swelling a dry furred tongue and pyrotoxic facies are late symptoms

In the early stages of the attack the severity of the vomiting is usually directly proportional to the degree of distention of the appendix Therefore the more severe the retching the more likely is the appendix to perforate early

In a case definitely diagnosed the author follows the recognized technique but uses minimal drainage For years he has favored almost complete elimination of the drainage tube from the peritoneal cavity He closes the wound tight in cases of perforated gastric or duodenal ulcer and pyosalpinx and in many cases of gangrenous appendix In suppurative appendicitis he uses only very small drainage tubes He believes that secondary infection often occurs along the course of a drainage tube

After closing the peritoneal suture line he lays a strip of rubber about  $\frac{1}{2}$  in wide along it and extends the strip to the surface to care for any serous drainage This permits primary healing with little chance of muscle layer infection

The cases reviewed are summarized in the following tables

TABLE 1—ACUTE CASES IN WHICH THE APPENDIX WAS REMOVED AT THE PRIMARY OPERATION

Situation of the appendix	Appendix not perforated		Appendix perforated		Died	Total
	Not adherent	Adherent	Not adherent	Local abscess		
Internal to caecum and in front of ileum	60	24	2	11	0	100
Internal to caecum and behind ileum	18	8	5	17	1	50
Internal to caecum	25	13	8	24	0	60
Retr. caecal	40	15	11	42	0	130
Toward pelvic brim	41	22	17	0	0	80
In true pelvis	21	10	10	15	5	61
Totals	216	111	51	116	6	500

TABLE II—ACUTE CASES IN WHICH THE APPENDIX WAS NOT REMOVED AT THE PRIMARY OPERATION

	Recovered	Died	Total
Circumscribed local abscess	20	1	21
Diffuse general suppurative peritonitis	7	6	13
Totals	27	7	34

TABLE III—INTERVAL AND SUBACUTE (RESOLVING) CASES

Situation of the appendix	Not adherent	Adherent	Died	Total
Internal to caecum and in front of ileum	49	36	0	85
Internal to caecum and behind ileum	7	13	0	20
External to caecum	5	18	0	23
Retrocæcal	7	47	0	54
Toward pelvic brim	30	11	0	41
In true pelvis	4	10	0	14
Totals	103	135	0	238

CHARLES F DU BOIS, M D

Ochsner, A, Gage, I M and Garside, E. The Intra Abdominal Postoperative Complications of Appendicitis. *Ann Surg*, 1930, 74, 544

A discussion of the most common intra abdominal postoperative complications of appendicitis is presented. The incidence of complications following appendicitis depends upon several factors (1) the age of the patient, (2) the care he received previous to operation and the treatment instituted by the surgeon, (3) the virulence of the offending organism, and (4) the patient's resistance.

The most frequent complication is peritonitis. In a review of the literature on appendicitis, it was found that the infection extended beyond the appendix in from 20 to 100 per cent of the cases. Of 193 consecutive cases of acute appendicitis admitted to the Charity Hospital, New Orleans, during a period of twenty two months 29.5 per cent presented a localized abscess 11.9 per cent, a diffuse peritonitis, and 37.3 per cent, sufficient evidence of peritoneal involvement to require drainage. In selected cases of peritonitis associated with acute appendicitis conservative therapy should be used. Fluids should be given subcutaneously by rectum, or intravenously. Nothing should be given by mouth. Gastric lavage is important.

Closely associated with, and usually dependent upon peritonitis is ileus. Ileus occurs in from 6 to 15 per cent of all postoperative complications of appendicitis. It is essential to differentiate between the mechanical and the adynamic varieties of ileus. In the former, the pain is characteristically colicky and intermittent and evidence of increased peristalsis is elicited by auscultation. In the latter, the pain is continuous and dull, and auscultation reveals no sound. The treatment must include the administration of fluids and chlorides to overcome the alkalosis and hypochloremia. In ileus of a mechanical variety, immediate relief of the obstruction is imperative. In many cases of adynamic ileus,

enterostomy is indicated. When enterostomy fails, splanchnic analgesia is often of value.

Residual intraperitoneal abscesses occur in from 1.8 to 5.7 per cent of all cases of acute appendicitis. Primary drainage of the peritoneal cavity does not prevent the formation of secondary or residual abscesses. The most frequent sites of residual abscesses are (1) the cul de sac of Douglas, (2) the iliocecal region, (3) the subphrenic space, and (4) the left iliac region.

In infections of the cul de sac of Douglas it is necessary to distinguish between simple infections and infections which go on to abscess formation. Infection occurs in this area most frequently in cases in which the peritonitis was treated by placing the patient in Fowler's position. A characteristic sign is diarrhoea with an excessive secretion of mucus associated with a sense of fullness in the rectum and urinary symptoms. On physical examination, relaxation of the external anal sphincter together with oedema of the anterior wall of the rectum and a bulging mass anteriorly in the rectum are found. The treatment of cul-de-sac infections consists of conservatism until abscess formation occurs. After abscess formation, incision and drainage are indicated. The authors prefer to drain cul de sac abscesses through the rectum because of the ease with which this may be accomplished and because the drainage is established at the most dependent portion.

Ileocecal abscesses occur in the region of the appendix and are relatively easy to diagnose. After abscess formation has occurred, incision and drainage, preferably without traversing the free peritoneal cavity, are indicated. Left sided abscesses occur relatively infrequently. They usually follow acute appendicitis in children. The signs and symptoms are those of localized inflammation on the left side of the abdomen. As soon as abscess formation has occurred, incision and drainage are indicated.

Subphrenic abscess is a frequent and important complication of acute appendicitis. It constitutes from 6.6 to 17.3 per cent of all residual abscesses. Because of its inaccessible position, a subphrenic abscess is usually not diagnosed until relatively late, but if the condition is borne in mind its diagnosis is relatively easy. The patient usually complains of pain in the region of the thorax, which is aggravated by deep breathing. There is limitation of motion on the affected side. The most frequent site of localization is a relatively small area on the upper surface of the liver, posterior to the right prolongation of the coronary ligament. Frequently associated with an abscess in this position is a similar abscess on the inferior surface of the liver. The treatment of subphrenic infection should be conservative until abscess formation occurs, when incision and drainage are indicated. Drainage should be established in such a way that no uninvolved pleural or peritoneal cavity is traversed. When the abscess is in the usual area, the right postero superior space, the best approach is retroperitoneal.

The least frequent intra abdominal complication of acute appendicitis is pyelephlebitis, which occurs in from 0.1 to 1 per cent of all cases of acute appendicitis and in about 5 per cent of patients dying of peritonitis. This condition is to be suspected whenever a history of chills is obtained either before or after operation. The treatment of pyelephlebitis is mainly prophylactic, the appendix should be removed early before the infection has spread to the venous radical. When portal thrombophlebitis has occurred ligation of the portal vein or some of its radicals is often life saving.

In conclusion the authors state that if the various postoperative intra abdominal complications of appendicitis are kept in mind their diagnosis and treatment are relatively easy. They emphasize that these lesions must be recognized early in order that proper treatment may be instituted before the development of an overwhelming toxæmia.

King E S J. Concerning Epithelial Tumors of the Vermiform Appendix. *J. College Surg. Australasia* 1930 11 364

Epithelial tumors of the appendix are of two distinct types—true carcinomata which are rare and non malignant carcinoids which are more common. Carcinoids are most common in young persons and constitute 0.4 per cent of all appendiceal lesions.

Carcinoid tumors may occur in any part of the alimentary canal from the cardia to the anus but are particularly frequent in the appendix. In the appendix the following types are found:

1. A hard apparently circumscribed nodule occurring at the tip of the appendix which measures up to 18 mm. in diameter and on section presents a uniform yellow surface. This is the most common type.

2. A nodule obliterating the lumen of the tube and arising in an arc of cicatrization due to chronic appendicitis.

3. A rare diffuse type resulting from invasion of the muscular layer by the tumor cells.

4. Multiple tumors.

The presence of a carcinoid may cause stenosis with consequent dilatation of the appendix and the formation of a mucocele or acute appendicitis.

Several theories have been advanced as to the origin of these tumors but the two which have received most attention are that the cells of origin are entodermal and that they are ectodermal.

In the normal mucosa of the alimentary tract there are found cells which are called argentaffin cells because of the presence within them of silver reducing granules. The origin and function of these cells are unknown but King believes they are closely related to and derived from the nervous system. He states that the growth of neuromata in the intestinal tract, the occurrence of argentaffin cells in these tumors, and the presence of similar proliferations containing the characteristic cells in relationship to carcinoids afford strong presumptive

evidence of the nervous origin of carcinoid tumors. The structure of the typical tumor with its spherical argentaffin cells together with spaces among the cells surrounded by columnar cells forming 'rosettes' closely resembles in appearance the structure of many brain tumors, gliomata of the retina, neurocytomata of the adrenal and other neoplasms of nervous tissue origin.

King concludes that carcinoid tumors arise from nervous cells which are probably derived from the sympathetic system. E S PLATT M.D.

Friedl H, and Stone H B. Four Rare Rectal Tumors: Intrarectal Solid Teratoma, Fibrosarcoma, Parafibrosarcoma and Chordoblastoma. *Surg. Gynec. & Obst.* 1930 1, 62

Intrarectal solid teratomata are exceedingly rare; only three cases having been reported in the literature. The case reported by the authors was that of a woman aged thirty-five years who complained of hair growing from the anus. Proctoscopic examination revealed an ovoid white tumor about the size of a large plum just above the lowermost rectal valve. The hair was growing from the tumor. At operation the rectal mucosa was divided from the pedicle of the tumor, the pedicle was dissected backward to the fibrous tissue in front of the sacrum and there clamped and ligated, and the wound in the posterior rectal wall was packed with dry gauze, the gauze being brought out through the anus. At the end of three weeks the wound in the rectal wall was healed. The patient was entirely well when she was seen eight months later.

This tumor unlike an ordinary dermoid was not cystic, but was a solid teratoid mass of mixed tissues covered by skin from which hair grew. Such a tumor may have been originally a cyst which ruptured into the lumen of the rectum and as it grew turned inside out its hairy skin lining becoming its covering.

On microscopic examination, the neoplasm was found surrounded by cornified squamous epithelium. Its main body was made up of bundles of smooth muscle and connective tissue, alveoli of fat, racemose sweat glands, bone, nerve fibers, and hair follicles.

The second case reported was that of a woman aged seventy-four years who had complained for several years of pain in the rectum and difficulty in securing bowel movements. The physician first consulted had found a swelling back of the anus and had incised it. About six weeks later the author removed an encapsulated tumor from the same area. The wound healed quickly. Examination a year later revealed no evidence of recurrence.

Under the low power microscope the section suggested a fibrosarcoma of the uterus. There were strands of hyalinized connective tissue interspersed with whorls of smooth muscle fibers. The diagnosis was fibrosarcoma of the rectum.

Such unusual tumors must be borne in mind because of the possibilities they present for mistakes in diagnosis. The most common error consists in mistaking them for malignant tumors.

Paraffinoma of the rectum has not been previously described. The authors report such a tumor in a man aged sixty one years who had been treated for hemorrhoids two years previously by an injection method and complained of increasingly persistent constipation. Rectal examination revealed just above the anal canal, an annular constriction which was hard and fixed and had well defined edges. The mucous membrane was smooth and free from ulceration. Sarcoma of the bowel wall was suspected. The biopsy diagnosis was tuberculosis of the rectal wall.

At operation, the tumor and about 3 in. of the lower portion of the rectum were resected. The sphincter muscle was preserved and a Whitehead type of repair of the rectum was performed.

Microscopic examination of the specimen showed the mucosa to be intact. The tissue beneath was infiltrated with small round cells. Pseudotubercles with giant cells and rarefied tissue of the foreign body type about them were seen. A few hyaline areas were interpreted as paraffin.

The last case reported was that of a man twenty seven years of age who had complained of "rectal trouble" for nearly nine years. The condition had been diagnosed as anal fistula and perirectal abscess. Its true nature was discovered when the entire tract was opened and pieces of the gelatinous tissue lining it were subjected to microscopic examination.

On section, the curettings revealed large polygonal cells arranged in strands with occasional syncytial masses and "foam cells." A diagnosis of sacrococcygeal chordoblastoma was made.

During the process of healing further treatment with radium was given. A year later the patient reported that the wound was completely healed.

The article is illustrated with six drawings of the teratomata of the rectum, showing the operative procedure, and photomicrographs of tissue from each of the tumors. J. EDWIN KIRKPATRICK, M.D.

Gordon Watson, Sir C., and Dukes, C. The Treatment of Carcinoma of the Rectum with Radium, with an Introduction on the Spread of Cancer of the Rectum. *Brit J Surg*, 1930, LVII, 643.

Cancer of the rectum may spread by direct extension through continuity of tissue, by the lymphatic system, and by the blood stream.

In the beginning there is a proliferation of the columnar epithelium of the mucosa which forms a mass that protrudes into the lumen of the bowel. The growth enlarges by marginal increase and by infiltration of the rectal wall. By the time it has reached the muscle, ulceration has usually occurred. Lockhart Mummery designates cases in which the growth has extended into the submucosa as "A" cases, those in which there is extension into the muscularis as "B" cases, and those in which it has spread into the perirectal tissues as "C" cases. In an analysis of 100 cases, Dukes found 1 "A" case, 24 "B" cases, and 75 "C" cases. None of the "A" and "B" cases showed glandular metastases,

but 40 of the "C" cases had involvement of the lymphatic glands. It would appear, therefore, that metastases do not occur until the cancer has spread by direct continuity into the perirectal tissues.

It is difficult to estimate the frequency of the spread of cancer of the rectum by the blood stream, but such spread becomes progressively more possible as the disease advances through the "A," "B," and "C" stages.

If a case can be definitely diagnosed as of the "A" or "B" type, radical excision may be regarded as unnecessary. However, it is not often that the surgeon sees a carcinoma of the pelvic portion of the rectum in the "A" or "B" stage. Too frequently, the growth is fixed and ulcerating and must be classed as belonging to the "C" type. It is obvious that in this type irradiation must include an efficient barrage of the lymphatic areas. Tissue response to radium depends, among other factors, on the degree of specialization of the malignant cell. While the difficulty of access is unfavorable, a uniform barrage can be obtained with the help of surgery.

Most of the cases treated with radium have been regarded as inoperable. In borderline cases, general factors must be taken into consideration. In cases of early or operable growths, radium is usually not employed in preference to surgery unless there are special contra indications to operation.

The following methods of attack have been adopted: (1) barrage by open operation from the perineum, (2) intra abdominal irradiation with needles, (3) irradiation through the vagina, (4) intrarectal irradiation, (5) irradiation through the perineal skin, and (6) surface irradiation.

In some instances an inoperable cancer can be rendered operable by the preliminary use of radium. Radium irradiation is of value also in the treatment of recurrences following excision. In recurrences following irradiation, surgery gives better results because the growth will have become radioresistant.

Experience in 93 cases treated with radium during the past five years has demonstrated that in certain instances an early growth on the anterior wall of the rectum can be destroyed by needling through the vagina, that an inoperable high growth can be apparently cured by abdominal irradiation, that an inoperable growth can be rendered operable by irradiation, and that in most advanced cases the use of radium will relieve the symptoms.

L. E. GANSIDE, M.D.

## LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Sheehan, H. L. An Embryonic Tumor of the Liver Containing Striated Muscle. *J Path & Bacteriol*, 1930, XXXII, 251.

The liver of a young girl was found to contain a number of papilliferous cysts lined by bile-duct epithelium. The substance of the papillae consisted of undifferentiated cells. The cells in one cyst be-

came malignant and formed a large tumor, destroying every other tissue except bile duct epithelium and showing a tendency toward intravascular growth but not toward metastasis outside the liver. They differentiated also into four types of more mature cells including striated muscle. They were considered to be rest cells of mesoblast.

SAMUEL KAHN, M.D.

**Chianello C.** Sympathectomy of the Portal Vein in Relation to the Glycogenic Function and Histological Changes in the Liver (*La simpatectomia della vena porta in rapporto alla funzione glicogenica ed alle modificazioni istologiche del fegato*). *Ann. ital. di chir.*, 1930, 15: 343.

In a study of the effects of sympathectomy of the portal vein in twelve healthy dogs the author found that the operation was followed in from twenty-four to seventy-two hours by an appreciable hyperglycemia, which sometimes doubled the initial blood sugar. Following this hyperglycemia, which was only transient, there was a gradual return to the initial blood sugar level within a month. A slight hypoglycemia then ensued. Examination of the liver showed congestion of the branches of the portal vein, the capillaries, and the central vein for a few days after the operation. The normal radiating direction of the cellular columns of Remak was disturbed and the cells themselves were distorted. There was also a visible lymphocytic infiltration around the vessels of the portal spaces and the central vein and the peribiliary connective tissue showed progressive hypertrophy.

In six of the dogs surgical sympathectomy was done and in the remaining six chemical sympathectomy was tried with the use of 5 per cent phenol. There was no appreciable difference in the end results.

The author undertook this study to compare the results of sympathectomy of the portal vein with the results of his previous study of the effects of sympathectomy of the hepatic artery. The latter procedure was followed by a transient hypoglycemia followed by a gradual return to normal within from thirty to fifty-six days. The histological changes in the liver incident to periaarterial hepatic sympathectomy were more marked and more lasting.

ANTHONY R. CAMERO, M.D.

**Costantini P.** Acute Torsion of the Gall Bladder (*Acutissima torsione della cistifellea*). *Poli. lin. Rome*, 1930, XXXVII, 572, *chir.* 549.

A man forty-two years of age was sent to the hospital as an emergency case with a diagnosis of intestinal occlusion. He had passed no stools for three days and had been vomiting. He complained of general abdominal pain which was particularly severe in the region of the cystic duct.

Examination showed rigidity of the abdominal wall, particularly in the right subcostal region, where a pear-shaped tumor could be felt. The pulse was 120. There was no fever. A diagnosis of acute hy-

drops of the gall bladder was made and operation performed at once. The gall bladder was large, black, and pear-shaped. It was free and showed three turns of its pedicle. Cholecystectomy was followed by an eventful recovery. Microscopic examination of the wall of the gall bladder revealed intense necrobiosis.

The fixation of the gall bladder to the liver varies. It may be such that torsion can take place quite easily. Nevertheless torsion of the gall bladder is rare. The author was able to find only thirty-three cases reported in the literature. The picture varies depending upon whether the gall bladder is twisted acutely on its pedicle or whether the torsion has involved the fundus or body of the organ. True torsion of the pedicle interrupts the circulation. It is only when the circulation is stopped absolutely that the torsion causes rapid gangrene and death. The cases in which death results in the presence of only a slight peritoneal reaction are cases of hyperacute sepsis from infection by anaerobic microorganisms.

The only treatment is immediate operation with drainage and tamponade of the subhepatic region.

VICTOR G. MORAN, M.D.

**Rivers A. B. and Hartman H. R.** Abdominal Exploration in Cases Diagnosed Cholecystitis or Cholelithiasis Before Operation. *Arch. Int. Med.* 1930, 41: 523.

In reviewing the records of 879 patients who had undergone cholecystectomy for cholecystitis or cholelithiasis Rivers and Hartman were impressed by the large variety of associated diseases. The preoperative diagnosis was cholecystitis in 287 of the cases and cholelithiasis in 592.

In the cases in which the preoperative diagnosis was cholecystitis the diagnosis of chronic cholecystitis was corroborated at operation but in 71 per cent an additional condition of either the gall bladder or some other organ which was not specifically mentioned before operation was discovered. In 2 per cent of the cases subacute cholecystitis was found uncomplicated by any other pathological condition. Thirty-one per cent of the cases were complicated by chronic appendicitis, 17 per cent by subacute appendicitis, 18.9 per cent by hepatitis, and 6.5 per cent by pancreatitis. In 12.1 per cent of the cases, gall stones were found although their presence had not been suspected before operation. Among the cases grouped under the heading "miscellaneous" were 4 of duodenal ulcer, 2 of duodenitis, 1 of cholangitis, 1 of myoma in the anterior wall of the stomach, 1 of Lane's kink, 1 of cholecystoduodenal fistula and 1 of accessory lobes of the liver.

In all of the cases in which operation was done after a diagnosis of cholelithiasis sufficient pathological change was demonstrable in the gall bladder to warrant cholecystectomy, but gall stones were present in only 84.8 per cent. In 29.9 per cent of the cases chronic appendicitis was found, in 2.5 per cent, subacute appendicitis, in 12.7 per cent, hepatitis, in 7.8 per cent, pancreatitis, and in 1.1 per cent cholangitis. It is suggested therefore, that

the diagnosis of cholelithiasis is not so easily made as is frequently assumed. In this group, cholecystitis alone was found in 15.2 per cent.

The analysis of the 879 reports revealed the presence of subacute cholecystitis or subacute appendicitis in 78 instances. Additional care in obtaining histories and especially careful general examination should tend to lessen error in the recognition of these complications.

Gall stones were discovered at operation in 106 cases (12.1 per cent) when pre-operatively a diagnosis of only cholecystitis had been made. Frequently, gall stones are not productive of severe pain.

Gall stones were not found at operation in about 15 per cent of the cases in which a pre-operative diagnosis of cholelithiasis was made. It is therefore apparent that the syndrome of cholecystitis may frequently include pain which is sufficiently severe to suggest the presence of gall stones.

The most important of the complications discovered during operation performed for cholecystitis or cholelithiasis was carcinoma involving the gall bladder, bile ducts, or liver. A careful search through the histories revealed no data which could have aided the pre-operative recognition of this complication.

Cholecystoduodenal fistula was a rare complication of disease of the gall bladder, being present in only 4 cases. Although it would have been impossible to diagnose this condition from the history, the presence of complications causing peritoneal irritation might have been suspected from the unusually severe and protracted pain and the marked local and systemic reaction.

It would appear that modern diagnostic methods correlating reliable laboratory data and carefully recorded histories leave certain conditions for the surgeon to discover. The margin of safety in the liver permits considerable destruction of that organ before any symptoms are produced. Mild hepatitis will go undiagnosed for a long time to come.

The surgeon's diagnosis of pancreatitis is always questionable as it is based chiefly on the enlargement and induration present. The medical diagnosis of pancreatitis is also unreliable.

The presence or absence of gall stones and the question as to whether the inflammatory reaction in the gall bladder is acute or subacute are not of vital importance in a case of surgical cholecystitis.

Peptic ulceration of the stomach and duodenum, like gall stones, is usually easy to diagnose, and if active should be recognized from the history even when the roentgenographic data are negative.

Certainly better means of recognizing carcinoma are needed. Unusual miscellaneous lesions will probably always be a surprise to the clinician after abdominal section.

Judd E S, and McIndoe, A H. Cholangitis.  
*J Michigan State M Soc*, 1930, xxix, 174.

The peculiar appearance of the surface of the liver frequently observed during operations on the gall

bladder and common duct is familiar to the majority of surgeons, but there is no uniformity of opinion as to the reason for this appearance and for the condition of the underlying hepatic tissue.

Chronic cholangitis constitutes the basis of most microscopically recognizable lesions of the liver associated with infection in the gall bladder with or without obstructive lesions of the common duct, but it appears in a large number of different forms and under a variety of circumstances. Its early changes are microscopic and are found with difficulty, its later stages may scarcely be distinguished from portal cirrhosis of the hobnail type. The authors are not concerned with the acute suppurative form of cholangitis, the uncommon types secondary to infestation with parasites such as ascariis lumbricoides or distomum hepaticum, or the types considered of hematogenous origin such as those associated with catarrhal jaundice. They discuss rather the condition seen when the clinical diagnosis of a surgical lesion of the biliary tract has led to exploration. They define it as an inflammatory process occurring in and around the wall of the intrahepatic and extrahepatic bile ducts varying from simple catarrh of the lining epithelium to marked lymphocytic and leucocytic cellular infiltration of the connective tissue of the entire portal spaces, and associated with proliferation of fibrous tissue leading to tremendous thickening of the walls of the duct. This definition is modified by the statement that although in most cases the change is confined to the bile ducts proper, it may extend to the intercellular bile canaliculi and there produce the condition known as biliary cirrhosis.

The element of infection is more important than the presence of obstruction and although obstruction and retention of bile undoubtedly hasten and intensify the process when once the infection is established, they do not except after long periods of time, produce cholangitis by themselves.

In the important surgical condition of the liver exemplified by stones and benign strictures of the common duct, the obstruction and stasis of bile occur in an organ already carrying a low grade infective process. The lighting up and rapid development of chronic cholangitis is the uniform result, and unless the obstruction is released, the ultimate stage of biliary cirrhosis will be produced, the hepatic reserve permanently reduced, and the organ crippled. It is probable that the tremendous injury occurring in the liver from this cause is responsible for many of the persistent symptoms which handicap the patient long after operation.

Deaver, J B. Cholangitis and Hepatitis. *New England J Med*, 1930, cccii, 513.

Cholangitis is a clinical and pathological entity which presents a circumscribed or diffuse infection of the bile channels and is serious because of consequent liver dysfunction and other harmful sequelae. The infection is entrenched deeply in the walls of the ducts and is frequently associated with extension

to contiguous structures. Probably many cases of cholecystitis are due primarily to diffuse cholangitis which later becomes localized in the gall bladder. The regional lymphatics show marked pathological changes, the pancreas is often congested and the liver is enlarged.

Cholangitis is most frequently associated with gastroenteritis but occasionally occurs in the course of infectious fevers or as a primary infection. Stone in the common duct is usually complicated by cholelithiasis which may become suppurative. Stricture of the common duct may closely simulate obstruction from a stone, the symptoms being the same except for pain. In stricture partial obstruction is the rule, the blockage becomes complete only as a result of reactive edema. Acute catarrhal jaundice is due to ascending infection from an inflamed duodenum. It should not be considered trivial because chronic cholangitis has often resulted from it.

The symptoms of cholangitis are those of infection and liver dysfunction. Complications may increase the seriousness of the condition: general peritonitis or septicæmia may result.

The treatment is essentially direct surgical drainage. This should be instituted early and should be prolonged. Medical drainage cannot accomplish the same result because it cannot be continuous for a long period of time. Chronic cholangitis which does not yield to medical treatment in a reasonable length of time should be treated surgically. Drainage is the chief objective. External drainage is to be preferred because internal drainage favors ascending infection of the biliary tract.

FARR GARDNER, M.D.

#### Digby A. H. Common Duct Stones of Liver Origin. *Brit J Surg* 1930, xiv, 5, 8

In the Chinese stones in the common duct usually originate in the liver. When they reach the common duct they grow to a remarkable size and lead to distention of the gall bladder, thus breaking Courvoisier's law. Excision of the gall bladder in these cases appears to be contra-indicated.

Gall stones form in the gall bladder only very occasionally in the Chinese. Conversely, intrahepatic stone formation is rare in Europeans. The author reports eight cases of common duct stones in adults: four males and four females. One patient was very fat, but the others were thin. In two cases the gall bladder and ducts contained mucus tinged by bile. No stones were found in the gall bladder in any of the cases but stones were present in the common duct in all. Most of the stones were fairly large and laminated, and consisted chiefly of bile pigments with traces of cholesterol, calcium and phosphates.

The author believes that stone in the common duct has its origin in an acute cholangitis due to bacterial infection. The five cardinal signs are pain in the epigastrium, enlargement of the liver and gall bladder, rigor, jaundice and albuminuria. If

untreated the patient will die of the condition sooner or later. Early operation is therefore indicated. This should consist of choledochostomy with removal of stones. The ducts must be drained.

It is not always possible to remove all of the stones. They may extend far up into the liver. The gall bladder should not be removed but should be saved for a later entero-anastomosis if that should prove necessary.

STANLEY H. MEYER, M.D.

#### De Takats G., Hannett F., Henderson D. and Seitz J. J. Correlations of Internal and External Pancreatic Secretion. IV. The Effect of Isolation of the Tail of the Pancreas on Carbohydrate Metabolism. *Arch Surg*, 1930, lx, 866

In a series of five dogs in which the pancreas was divided with an electric cautery and then wrapped in omentum and double doses of sugar were given by mouth to test the animals' sugar tolerance tests made at intervals of from two to four weeks for several months showed a definite fall in the blood sugar during fasting, a flattening of the tolerance curves and an increase in the posthypoglycæmic hypoglycæmia. In three dogs the lower levels persisted at the conclusion of the experiment. One dog's values returned to normal and one dog developed a definite decrease in tolerance.

When intravenous injections of dextrose were given more than the normal amount of dextrose per hour per kilogram of body weight was necessary to produce glycosuria in the cases of four of the five dogs.

Following the injection of epinephrin a peculiar imbalance of carbohydrate regulation was manifested by the blood sugar curves.

The correlation of these observations with the author's previous histological studies suggests the possibility that the mild pancreatitis caused by the stimulus of the operation resulted in a hypertrophy and hyperplasia of the islet tissue. The authors are unable to say whether an increase in insulin output, a change in the secretory rate as a result of a change in innervation or a functional liver block diminishing the outpour of glycogen was a factor. They emphasize that their results can by no means indicate the possible effects of such an operation on man.

ROBERT ZOLLINGER, M.D.

#### Allan F. N. Boeck, W. G., and Judd E. S. The Surgical Treatment of Hyperinsulinism. *J Am Med Ass*, 1930, xciv, 1116

Hyperinsulinism in cases in which insulin has not been administered is now recognized as an entity. It represents the antithesis of diabetes just as hyperthyroidism is the reverse of myxedema. It is characterized by a constant tendency of the level of the blood sugar to fall. This necessitates the ingestion of food or sugar at frequent intervals to prevent the occurrence of hypoglycæmic symptoms.

A definite pathological basis for hyperinsulinism was demonstrated through the study of a case seen

at the Mayo Clinic in 1926. In this case the overproduction of insulin was found to be due to a carcinoma of the pancreas originating in the islands of Langerhans. Extirpation was out of the question.

The first attempt at surgical treatment was carried out by the Finneys. At the Mayo Clinic, partial resection has been performed in two cases. Holman's case was similar.

In the first four cases in which operation was performed, no anatomical change in the pancreas was found to account for the disturbance in insular function, yet there was strong evidence of an excessive secretion of insulin. In any case in which such an excessive secretion occurs it may be dependent on a functional disturbance of the islands of Langerhans. Absence of visible change in the islets is not inconsistent with this view for, in diabetes, loss of the functions that are dependent on insulin frequently occurs without a demonstrable change in the pancreas. Considerable evidence has been accumulated to show that the nervous system has an important influence on the secretion of insulin. It has been suggested that certain cases of diabetes may be due to stimulation of inhibitory fibers in the vagus nerves. On the other hand, the experimental contributions of Britton and La Barre, especially, indicate that stimulation of the vagus nerve may bring about a fall in the level of the blood sugar. In the cases cited it was natural to suspect that the overactivity of the pancreas might be due to vagal stimulation. However, since atropin had no effect on the falling concentration of blood sugar, evidence cannot be brought forth to support this hypothesis. Whatever may be the fundamental cause of the disorder, it seems clear that excessive secretion of insulin is the cause of the symptoms and it is therefore logical to attempt treatment by resection of the pancreas.

When hyperinsulinism is due to a local tumor of the pancreatic islands, one might expect a complete cure to follow excision. The experience of Howland, Campbell, Maltby, and Robinson confirms this opinion. However, in four of the five cases in which operation was attempted there was no tumor but, presumably, overactivity of the whole gland. This condition presents a more difficult problem. It must be admitted that the results of the operations have not been very satisfactory. One of the patients was not benefited. The condition of three patients was improved, but in none of the cases was recovery complete, and in one case the improvement was not maintained. Theoretically, however, the excision of a part of the gland should accomplish the same result as is obtained from subtotal resection of the thyroid gland for the control of hyperthyroidism. The failure to obtain more satisfactory results with the operation may be due to failure to remove a sufficient amount of pancreatic tissue. Extensive resection of the pancreas is technically difficult, and it may be hard for the operator to estimate the proportion of pancreas to be excised. In each case the portion of pancreas removed seemed large, but was

relatively small, probably not more than 30 per cent of the entire gland. In operations on the thyroid gland for hyperthyroidism, not less than 50 per cent of the gland must be removed to accomplish a cure, and the part left behind is often only one fourth the size of the normal gland. More radical resection of the pancreas should give results which are comparable with those obtained in surgery of the thyroid gland.

It is possible that medical treatment may give relief. Treatment with thyroid substance may counteract, to some extent, the overaction of insulin, since hyperthyroidism, when associated with diabetes, reduces the effectiveness of insulin. When ether anesthesia was used in operating the tendency toward hypoglycemia was abolished for several days or longer. A brief period of ether anesthesia alone in one case delayed the fall in blood sugar for several hours. The occasional induction of anesthesia for longer periods might give a patient with severe hyperinsulinism temporary respite. The nature of the diet may have an influence on the rate of fall of the blood sugar. These problems are under investigation.

#### MISCELLANEOUS

Nord, F. Phrenic Neurectomy as Treatment of Diaphragmatic Hernia. *Acta med Scand*, 1929, lxxvi, 511.

Following a careful study of the results of phrenic neurectomy, Lemon suggested that this operation might be a valuable preparatory measure to operations in the upper part of the abdomen which are hindered by the movements of the diaphragm. Harrington used it successfully in preparation for the radical operation for diaphragmatic hernia. In 1929, Harrington reported three cases of diaphragmatic hernia in which the general condition contraindicated the radical operation and excision of one phrenic nerve gave good results.

The author reports two cases in which excision of one phrenic nerve was followed by remarkable improvement in the symptoms. In one case, an ulcer above the point of constriction of the stomach responded to medical management after the diaphragm had been relaxed by the neurectomy.

The author believes that this simple operation should be given a trial in all cases of diaphragmatic hernia with abdominal symptoms, and also in cases of relapse after the radical operation.

GEORGE A. COLLETT, M.D.

Silva, A. G. Subhepatic Perivisceritis (La perivisceritis subhepatica). *Rev. méd. de Chile*, 1930, lvi, 85.

Perivisceritis produces a number of functional symptoms including digestive disturbances and reflex, secretory, and sensory symptoms, the anatomical cause of which is a chronic plastic peritonitis resulting in adhesions of some of the abdominal organs. The inflammation may be primary in the peritoneum or secondary to disease of an abdominal



organ. It is probably secondary, in most cases. It occurs chiefly in the right upper quadrant of the abdomen in the right iliac fossa. High perivisceritis on the right side is generally secondary to disease of the bile tract particularly of the gall bladder, or to gastroduodenal diseases, chiefly ulcer. It may result also from disease of the appendix caecum, or colon. This form the author calls "subhepatic perivisceritis."

Silva has seen subhepatic perivisceritis in 27 per cent of the cases treated on his service since September 1928. He has seen forty seven cases on his own service and thirteen on other services making a total of sixty cases. Fifty one of the patients were women. The youngest patient was twenty one years of age and the oldest sixty six. Most of the patients were between thirty and forty years of age. Silva reports eleven of the cases.

While perivisceritis is often the result of cholecystitis, it occurs in only a relatively small percentage of the cases of that condition. It does not depend on the severity of the primary disease as it may occur in very mild cases and may not occur in very severe ones. Accordingly there must be some general causative factor. In the author's cases the most frequent general infection was syphilis which was present in 43.3 per cent. Tuberculosis was present

in only 3.3 per cent. Oral infection, especially of the teeth was present in 82 per cent. Infection of the female genital organs was also found in a large percentage.

It is probable therefore, that perivisceritis depends not only on a visceral lesion but also on a special tendency to react on the part of the peritoneum due to general disease.

Perivisceritis is most common in the subhepatic region because the organs most frequently causing it the gall bladder, duodenum and stomach, are in that region and the appendix is connected with the subhepatic region by a lymphatic network. As a rule the omentum shows signs of infection.

Perivisceritis should always be thought of when symptoms that might be caused by it are noted. The clinical diagnosis must be confirmed by roentgen diagnosis. The recurrence of symptoms after operation for cholecystitis or gastric or duodenal ulcer should suggest the possibility of perivisceritis. Prominent roentgen signs are abnormal height and decreased mobility of the right diaphragm due to unilateral diaphragmatic paresis.

The first indication in the treatment is the cure of the primary disease. For the perivisceritis itself the author has found diathermy of value.

WALTER G. MORSE, M.D.

# GYNECOLOGY

## UTERUS

Shaw, W F Acute Sacculization of the Uterus  
*J Obst & Gynec Brit Emp*, 1930, xxxvii, 72

The author reviews three cases of acute sacculization of the uterus from the literature and reports a case of his own. In all of them the sacculization occurred over the fundus of the uterus between the insertion of the fallopian tubes and its production was sudden and painful. The sacculus was in no way associated with either fallopian tube but was in communication with the uterine cavity.

In his own case, Shaw made a pre operative diagnosis of pregnancy in the third month with a subperitoneal fibroid undergoing red degeneration. On examination of the tumor he found it to consist of a four months' fetus contained in a thin walled sac communicating with the uterus. The placenta was within the uterine cavity. After removal of the placenta and membranes the opening into the sac was closed. At operation two years later a vertical depression was found in the anterior and posterior walls of the uterus. Shaw attributes the sacculization to weakness of the uterine wall at the site of fusion of the muellerian ducts. HARRY M NELSON, M D

Morse, A H Carcinoma of the Female Genital Tract in Childhood  
*Am J Obst & Gynec*, 1930, xix, 520

Malignant lesions involving the vulva, vagina, uterus, or ovary in childhood are relatively uncommon and usually sarcomatous. Neoplasms of an epithelial origin affecting these organs are even less frequently found in children. Following a review of the literature on carcinoma of the female genital tract in childhood, Morse reports a case of carcinoma of the uterus in a girl ten years old. The patient was admitted to the Yale Woman's Clinic July 7, 1928, with a diagnosis of gonorrhoeal vaginitis of two years' duration. Two years before her admission, her mother had noticed that the child's bed was soiled by a discharge issuing from the vagina. Smears were said to be positive for gram-negative intracellular diplococci. During the three months previous to the patient's admission to the clinic the vaginal discharge became more profuse.

On examination, the abdomen was found to be distended and the fundus of the bladder to extend upward to the umbilicus. Palpation revealed tenderness in the suprapubic region and in the iliac fossae, but no pelvic mass was demonstrable. The labia minora and the urethral orifice were red and swollen. From the vagina there issued a profuse, watery discharge which was blood stained and occasionally contained bits of grayish yellow semisolid material. Vaginal examination revealed the findings

noted on palpation of a carcinomatous cervix in an adult. Although there was induration of the right vaginal wall, the neoplasm of soft, fragile tissue apparently originated in the infravaginal cervix.

The diagnosis was adenocarcinoma originating in the glandular structures of the cervix. At operation, the omentum was found adherent at several points to the peritoneum. The separation of loops of small intestine from the fundus gave rise to free bleeding. This was controlled by ligation. The body of the uterus, enlarged to five times the size regarded as normal for the child's age, was densely adherent to the region of the broad ligaments and to the rectum. During the manipulations the friable fundus tore at one point and blood stained, necrotic material exuded. Removal of the organ without great hazard to life was obviously impossible. Accordingly, the omentum was drawn over the fundus and the abdominal incision closed. The patient died suddenly May 30, 1929.

In conclusion the author states that although malignancy of the uterus in the first decade of life is unusual, one should guard against the error of attributing genital hemorrhage in the young child to infection or early menstruation without excluding neoplasm. E L CORNELL, M D

Douny, E Glandular Recurrence of a Carcinoma of the Cervix Cured by Radium Puncture at Laparotomy  
(Guérison d'une récidive ganglionnaire d'un cancer du col par la radium puncture après laparotomie)  
*Bull Soc d'obst et de gynec de Par*, 1930, xix, 159

The patient whose case is reported was subjected to subtotal hysterectomy for bilateral ovarian cysts in 1917. In 1920 biopsy from the cervix showed epithelioma. She was then treated with radium applicators in the cervical canal and in the posterior cul de sac. Six months later a hard mass the size of an egg was felt in the left cul de sac. Laparotomy was done and four radium needles were inserted in a large node along the left internal iliac.

Nine years later acute intestinal obstruction developed. At laparotomy it was found to be due to adhesions about an inflamed appendix. In the region of the radium puncture an area of induration remained, but biopsy from this tissue showed absence of carcinoma. C D HAAGENSEN, M D

## ADNEXAL AND PERIUTERINE CONDITIONS

Michon, L Torsion of the Normal Adnexa (Le volvulus des annexes saines)  
*Gynec et obst*, 1930, xxi, 103

Michon is of the opinion that torsion of otherwise normal adnexa is less rare than is commonly sup-

posed. He reports five cases. His belief that the adnexa in these cases were not the site of a previous inflammatory condition (salpingitis, hydrosalpinx, etc.) was based on a negative history, negative microscopic findings and a normal appearance of the other tube and ovary. In all of the five cases the torsion was unilateral. In three, only the tube was twisted in the two others, the ovary was included. In all cases the torsion was marked and in most of them it exceeded 360 degrees. It resulted in thrombosis and hemorrhage and in some instances in hematosalpinx.

As possible factors in the production of tubal torsion the author mentions (1) congenital abnormalities of the tube such as abnormal length, persistence of fetal convolutions and an abnormally long mesosalpinx; (2) local adhesions at the distal end causing fixation of the tube and allowing it to twist upon itself; and (3) disturbances in innervation resulting in unusual peristalsis and antiperistalsis.

The symptoms of acute torsion are usually severe but because of the rarity of the condition a correct diagnosis is seldom made before operation.

The author reports also a case of torsion of a tuberculous tube. HAROLD C. MACK, M.D.

**Aldridge A. H.** An Analysis of Operative Results in 1,066 Cases of Salpingitis. *Am J Obst & Gynec* 1930 xix 381.

From his study of the operative results in 1,066 cases of salpingitis the author draws the following conclusions:

1. Operation is contra-indicated when the infection is still active.

2. Dangerous smoldering infections may be present in the pelvis which even after bimanual examination may not be accompanied by leukocytosis or fever. Therefore the sedimentation time should be used routinely to aid in the detection of active infection.

3. Abdominal operations performed while the infection is still active result in a high mortality, excessive morbidity due especially to shock, sepsis, and defective wound healing; frequent radical surgery and disappointing end results.

4. When operation is preceded by a long period of palliative treatment the mortality and morbidity are minimal; conservative surgery is possible more frequently and satisfactory end results are obtained in a maximum number of cases.

5. When operation is unavoidable after prolonged palliative treatment it should be delayed until the inflammatory exudate about the focus of infection has been absorbed and the leukocyte count, temperature and sedimentation time are normal.

6. For drainage of the peritoneal cavity it is best to use the vaginal route as by this method the period of postoperative morbidity from delayed wound healing and the incidence of postoperative incisional hernia are materially decreased.

E. L. CORNELL, M.D.

## MISCELLANEOUS

**Kimura S.** The Relationship of Various Kinds of Tumors Complicated in the Female Genital Organs. A Very Rare Instance of Complication and Statistical Observations. *Jap J Obst & Gynec* 1930 viii 115.

Multiple tumors of the female genital tract are considered in this article. The author reports a case in which operation for a pelvic tumor revealed a cancer of the cervix, multiple uterine myomata, a cyst of the right ovary, bilateral parovarian cysts and bilateral salpingitis. This was the only case of its kind among 1,857 cases in which operation for pelvic tumor was performed during a period of five and a half years.

Combinations of 2, 3, or 4 types of genital neoplasms in the same individual are reviewed. Myoma and cancer of the uterus were found in 30 cases which constituted 4.64 per cent of a total of 633 cases of uterine cancer and 4.61 per cent of 649 cases of myoma of the uterus. Myoma was a complication in 27 (4.4 per cent) of 613 cases of cancer of the cervix and in 3 (15 per cent) of 20 cases of cancer of the fundus of the uterus.

Ovarian cyst and uterine cancer were found together in 23 cases which constituted 3.63 per cent of 633 cases of uterine cancer and 4.29 per cent of 539 cases of ovarian cyst.

There were 705 cases of uterine myoma complicated by ovarian cyst. These constituted 16.17 per cent of 649 cases of uterine myomata and 19.61 per cent of 535 cases of ovarian cyst.

Nine of 25 parovarian tumors removed were combined with other tumors—5 with uterine myoma, 2 with ovarian cyst, and 2 with cancer of the cervix.

The only triple combination was the association of uterine cancer, myoma, and ovarian cyst. Four tumors of this kind were found among 1,817 pelvic tumors studied.

LEOPOLD GOLDSTEIN, M.D.

**Laroyenne Martin, Michon and Meyssonier.** Endometrioma of the Crural Region (*Endométiome de la région crurale*). *Gynec et Obst* 1930 xxi 97.

The authors report what they believe to be the first case of endometriosis of the crural region to be recorded in the literature. The tumor which was situated in the sac of a femoral hernia increased in size and became painful during the menstrual periods. X-ray therapy was of no benefit and rendered surgical removal more difficult. The diagnosis was made only after microscopic examination of the tissue. The authors conclude that the tumor can be explained only as being the result of an inflammatory metaplasia of the peritoneal endothelium (theory of Meyer).

HAROLD C. MACK, M.D.

**Bell W. B.** Sterility in Woman. *Brit M J* 1930 i 629.

Since 1880 the birth rate for England and Wales has dropped from 32.3 to 16.3 per 1,000. The higher

classes show lower fecundity than the lower classes. This must be explained by the assumption that knowledge concerning contraception is more wide spread among the higher classes.

Before a woman is subjected to the discomforts of examinations to determine the cause of sterility, the husband should be examined as the incidence of sterility in the male is about 17 per cent. The cause of sterility may be congenital or acquired. Congenital causes include atresias, malformations, and hypoplasias. Operative interference is occasionally indicated. The acquired lesions are anatomical, neoplastic, and infective derangements.

Retroversion following streptococcal infection reduces the depth of the seminal pool, and prolapsed ovaries may cause dyspareunia. Occasionally, both require operation. In some cases failure to conceive may be due to operative trauma which has eliminated essential structures, or otherwise altered the genital tract. Curettage should never be done for sterility.

Occasionally, benign neoplasms may be responsible for sterility because of their position. In 40 per cent of cases of sterility in women the condition is due to streptococcal or gonococcal infection. The infected cervix with its persistent discharge may so alter the acidity of the vagina that spermatozoa are immediately killed. The endometrium, which is

regenerated every month, is probably not a factor in sterility.

Occlusion of the tubes resulting from infection was considered the cause in 35 per cent of the author's cases. When occlusion is suspected its presence or absence can be demonstrated definitely by the Rubin test. Roentgenographic studies after lipiodol injection are not often necessary, but are of value to determine the results of operative interference. The use of the Rubin test as a therapeutic measure in partial obstruction of the tubes is recommended.

Three operations are suggested for selected cases of sterility—salpingostomy, excision of the isthmus with implantation of the ampulla, and grafting or implantation of the ovary so that a free surface is placed in the uterine canal. The last operation was suggested by Estes and Tuffier.

With regard to the part played by the endocrine system, the author states that sterility is usually associated with failure of ovulation, amenorrhoea, or scanty menstruation, and that the effect of the thyroid and pituitary gland cannot be denied.

Deficiency of calcium and vitamins is also a factor. However, except for these, the diet is of little importance.

Lead poisoning and chronic alcoholism are occupational and toxicological factors.

DONALD G. TOLLESON, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

**Begoun P** The Diagnosis and Management of Ruptured Extra Uterine Pregnancy (Diagnostic de la rupture de la grossesse extra utérine et conduite à tenir) *Rev franç de gynéc et d obst*, 1930, xiv 31

In a discussion of the classical signs and symptoms of ruptured ectopic pregnancy Begoun emphasizes progressive pallor as a sign of great importance. He cites a case in which the usual signs and symptoms of tubal rupture being absent the diagnosis confirmed at laparotomy was based on this sign and the presence of an adnexal mass. The condition had been erroneously diagnosed as salpingitis.

Begoun advises cul de sac puncture to differentiate pelvic hæmatocele from abscess. He considers a leucocyte count of value only when it is made very soon after the onset of symptoms. A rapidly progressive polymorphonuclear leucocytosis in the absence of fever is characteristic of internal hæmorrhage. He advises immediate surgical intervention even in the presence of shock with treatment of the shock during not before the operation.

HAROLD C MACK M D

**Jeanneney and Rosset Bressand** The Cataclysm in Ruptured Ectopic Pregnancy Is Not a Result of Hæmorrhage (Le cataclysme dans la rupture de la grossesse extra utérine n'est pas fonction de l'hémorragie) *Rev franç de gynéc et d obst* 1930 xiv 156

The classical symptoms of ruptured extra uterine pregnancy (sudden pain, syncope shock, etc.) may be present in cases in which there has been little or no internal hæmorrhage as well as in cases of massive hæmorrhage. The authors are therefore of the opinion that these symptoms are due to some disturbance in the nervous mechanism rather than to acute anemia. In support of this conclusion they report two cases in one of which the classical symptoms were associated with a small hæmatosalpinx and a minimal amount of free blood in the pelvis and in the other of which massive internal hæmorrhage was preceded by none of the classical symptoms. They do not explain the disturbance in the nervous mechanism.

HAROLD C MACK M D

**Balard P, and Mahon R** The Management of Retroplacental Hæmorrhage (Conduite à tenir en présence d'une hémorragie rétro placentaire) *Re franç de gynéc et d obst* 1930 xiv, 133

Believing that uteroplacental apoplexy often becomes cured and is followed by normal delivery Balard and Mahon reject the view of Portes that all cases of retroplacental hæmorrhage should be treated by cesarean section. Since the degree of the intra

muscular hæmorrhage determines the ability of the uterus to contract, they advise a test of labor after artificial rupture of the membranes in suspected cases. Spontaneous delivery after this procedure is clinical proof that the uterine musculature is not seriously impaired. Cesarean section is advocated only when the fetus is still alive and intervention is necessitated by severe hæmorrhage and failure of the uterus to contract. When the uterus fails to contract after delivery hysterectomy is advisable. Because of the friability of the uterine wall, manual dilatation of the cervix, version, and extraction are contra indicated. Tamponade has no value in controlling the hæmorrhage.

The authors review thirty two cases with no maternal deaths.

HAROLD C MACK M D

**Kobak, A J** Fetal Bacteræmia. A Contribution to the Mechanism of Intra Uterine Infection and to the Pathogenesis of Placentitis. *Am J Obst & Gynec* 1930, xiv 299

The author made 374 cultures of fetal blood aseptically drawn from the umbilical cord during the third stage of labor. Thirty four approximately 9 per cent were positive. Histological studies were made of the placenta in all cases in which the culture of the cord blood was positive or the labor was unduly prolonged. Morbid processes in all babies were studied histologically, and bacteriologically.

It was found that the fetus may have a temporary bacteræmia without any untoward effects. Bacteræmia frequently occurs in the fetus as an ascending infection without prolonged rupture of the bag of waters. The route of the infection is through the vagina the amniotic fluid and the placenta. Infection may reach the fetus also from the maternal blood stream by way of the placenta.

A placental reaction occurs as the result of the prolonged sojourn of organisms in the amniotic fluid and the elaboration of a toxin having chemotactic properties. Leucocytes in the fetal vessels and possibly in the maternal intervillous spaces are then attracted toward the amniotic cavity.

Organisms in the amniotic fluid enter the fetal circulation by breaking through the damaged amniotic epithelium and through the superficially coursing placental vessels. The prognosis for the fetus becomes unfavorable as the period between rupture of the membranes and delivery becomes unduly prolonged.

E L CORNELL M D

**Barnes H L, and Barnes L R P** Pregnancy and Tuberculosis. *Am J Obst & Gynec* 1930, xiv, 490

This report is based on the replies to a questionnaire regarding the effect of pregnancy on tuber

culosis from the clinical standpoint which was sent to tuberculosis sanatoria and hospitals. The findings in 410 cases are summarized as follows:

1 Totamia of pregnancy was present in 14.5 per cent of the cases.

2 Seventy-nine per cent of the mildest cases, 65 per cent of the moderately advanced cases, and 28 per cent of the far advanced cases showed improvement during pregnancy.

3 The relative frequency of improvement in the cases with positive and negative sputum corresponded closely to that of tuberculosis not complicated by pregnancy.

4 X-ray evidence of clearing in the lung was noted in 15 of 26 full term cases in which data were available.

5 Reports made at variable periods after confinement showed that 48 per cent of the women whose pregnancies continued to term, 40 per cent of those who had spontaneous abortions, 33 per cent of those who had therapeutic abortions, and 8 per cent of those who had premature labors were living.

6 Of 358 pregnant women with tuberculosis, 8 died undelivered and 3 died in labor. In all of those who died the condition was advanced.

7 Of 324 children of tuberculous women, 82 per cent were "normal" or in "good condition" at birth and 67 per cent were stillborn.

8 Of 42 women whose pregnancies were terminated not later than the fifth month, 17 (40.4 per cent) showed marked activity of the tuberculous process after delivery as compared with 37 per cent of 275 women whose pregnancies continued to term.

9 Of 42 women whose pregnancies terminated not later than the fifth month, 8 (19 per cent) showed a marked decrease in the activity of the tuberculous process after delivery as compared with 45 (16 per cent) of 275 women whose pregnancies continued to term.

10 Of 56 ex-patients of a state sanatorium who had positive sputum and are known to have borne children during or since their sanatorium residence, 31 per cent are living, while of all tuberculous ex-patients, only 26 per cent are living.

11 Of 53 women with negative sputum who are known to have had children during or since their sanatorium treatment, 40 (75 per cent) are living.

The authors conclude that a woman with active tuberculosis should avoid pregnancy in order that she may be spared the extra work and worry associated with the care of a baby and that the baby may be spared the risk of infection.

The problems of tuberculosis and pregnancy need further clinical research, but the data obtained from this series of 410 pregnant tuberculous women suggest that pregnancy in itself has a harmful influence, if any at all, in only a small percentage of cases, and that abortion is unnecessary in favorable cases and futile in those that are unfavorable.

About 81 per cent of the tuberculous women who become pregnant and who were not subjected to therapeutic abortion had normal children. A policy

which would have sacrificed all of these children on the apparently slight and still unproved chance of saving the mothers would not be easy to justify.

E. L. CORNELL, M.D.

## LABOR AND ITS COMPLICATIONS

Rudolph, L., and Ivy, A. C. The Physiology of the Uterus in Labor. *Am J Obst & Gynec*, 1930, **xiv**, 317.

The authors state that the process of evacuation of the uterus is the most interesting physiological evacuation process they have observed to occur in the mammalian organism. The coordination and purposefulness with which the uterine musculature functions and the timing of the sequence of events is very remarkable. Such phenomena are best explained on the basis of an intrinsic nervous mechanism or a specialized neuromuscular mechanism analogous to that found in the heart. The authors discuss especially the action of the musculature of the corpus uteri of the dog. As the fetus enters, the corpus uteri dilates to receive it, and when the fetus is fully within its cavity, it contracts to expel it. The question as to what causes the corpus uteri to act in this manner is important because it has a bearing on the lower segment of the human uterus.

Obviously, the cause might be mechanical distention or nervous inhibition. In the stomach, receptive relaxation is due to a nervous inhibitory mechanism. Muscle, when stretched, is usually caused to contract unless it is inhibited by nerves or chemicals. If over stretched, it is injured. The musculature of the corpus uteri contracts after it has been dilated. Epinephrin, a drug that acts on nerve endings, has an inhibiting effect upon it. The uterine corpus responds to ergotamine and pituitrin by contracting. It undergoes much lengthening followed at an appropriate time, by contraction. Therefore, the logical conclusion is that the dilating or thinning of the corpus uteri is due chiefly to a nervous inhibitory mechanism, and its contraction is due to a stimulus from the vagina or the contraction of the fundal sphincter of the horn from which the fetus has passed.

Another significant observation relative to the corpus uteri is that its postpartum activity differs from its activity in labor. In labor, it contracts only after the fetus has entered it. In the early postpartum state, it contracts a few seconds after each contraction of the horn. Such a difference is most logically accounted for on the basis of an intrinsic nervous mechanism and makes possible more rapid evacuation of the lochia.

If it is permissible to assume, on the basis of this evidence, that the corpus uteri in the dog is analogous to the lower uterine segment in the human female, it is logical to conclude that in the human female the lower uterine segment is formed because the musculature concerned in its formation is inhibited by an intrinsic nervous mechanism which is excited either by the stimulation of the presenting part or by

the tonic or most powerful contractions of the fundus uteri which is analogous to the relationship of the pyloric sphincter and gastric musculature. It is reasonable to conclude also that, after partial expulsion of the fetus has occurred and the fundus uteri has contracted and retracted to its full extent the uterus and the lower uterine segment may contract circularly and play some rôle in the expulsion of the fetus and in the prevention of inversion of the uterus. It is generally believed that the final expulsion of the fetus is performed by the action of the abdominal muscles and the diaphragm which raises the intra-abdominal pressure. This is obviously a factor but is not essential, as women and dogs with spinal transection deliver normally.

The results obtained by the authors on stimulating the extrinsic nerves of the uterus in the dog demonstrate that of all of the hollow abdominal viscera the uterus is the least affected by electrical stimulation of its extrinsic nerves. This means that the extrinsic nerves of the uterus in the dog play only a minor rôle in the motor activity of the uterus.

The authors state that in a study of the effect of drugs on the motility of the postpartum uterus more accurate information can be gained by the graphic method than by any other procedure used heretofore.

Pituitrin affects the circular musculature to a greater extent than the longitudinal musculature.

The observation that in the dog epinephrin temporarily abolishes not only the spontaneous activity of the pregnant and non pregnant uterus *in situ* but also the activity excited by ergotamine and pituitrin has a number of interesting physiological pharmacological and probably clinical aspects. The fact that in some dogs it causes a primary contraction followed by a period of relaxation complicates the problem.

Epinephrin antagonizes the action of ergotamine. The fact that epinephrin antagonizes the action of pituitrin on the uterus of the dog is especially significant since pituitrin is supposed to act directly on the muscle and cause contraction irrespective of the type of autonomic innervation. This observation shows that the uterine inhibitory mechanism is still intact during the action of pituitrin and can be caused to function by epinephrin its function then decreasing the effectiveness of the contractions induced by the pituitrin. E. L. CORNELL M.D.

Norris C. C. Dry Labor With an Analysis of a Series of Cases and a Discussion of the Treatment. *Am J Obst & Gynec* 1930 xiv 500.

Among the ward cases in the hospital of the University of Pennsylvania during the last three years dry labor occurred in about 7 per cent of deliveries whereas among private cases it occurred in only 5.3 per cent. Premature rupture of the membranes exposes both mother and child to increased hazards. It is more serious for primiparae than multiparae.

After rupture has presumably occurred and before labor sets in, the treatment should be for a time at

least essentially expectant. Operative procedures should be undertaken only in the presence of definite indications such as extreme exhaustion and obstetrical complications. When indicated, manual dilatation preferably by the Harns method, should be employed. After labor has begun definitely the physician must be guided by the conditions as they arise in the individual case. The treatment of dry labor should be essentially conservative. Operative delivery should be reserved for cases in which it is especially indicated. Complications should be carefully guarded against and should be corrected by appropriate treatment as they arise. A dry labor is essentially a complicated labor and can be managed most advantageously in a maternity hospital.

I. L. CORNELL M.D.

Haynes L. W. Thymophysin in Obstetrics. *J Michigan State M Soc*, 1930 xix, 158.

Thymophysin is a combination of extract of the hypophysis and extract of the thymus gland which has been found rather uniformly to excite and strengthen labor while preserving its physiological character.

In a preliminary report based on 50 cases which he made in 1918 the author stated that thymophysin was particularly effective in inertia in the first stage of labor, causing strong and continued labor pains which led in a comparatively short time to spontaneous delivery or complete cervical dilatation permitting surgical intervention. In the other stages of labor its effect was less regular. It appeared to be harmless to both mother and baby.

This report is based on 500 cases which were divided into 4 groups according to the indications followed for the use of the thymophysin. The indications were Group 1, primary inertia. Group 2, secondary inertia. Group 3, the induction of labor in toxic cases, and Group 4, the induction of labor in non toxic cases. In Group 1 there were 341 cases, in Group 2 83 cases, in Group 3 35 cases, and in Group 4 41 cases. Two hundred and thirty two of the women were primiparae.

In Group 1 there was rapid complete spontaneous delivery in 216 cases and rapid complete dilatation rendering surgical interference possible in 98. In 27 cases the treatment failed.

In Group 2 early delivery occurred in 64 cases, and the thymophysin definitely aided delivery in 12 others. In 7 the treatment failed.

In Group 3 early delivery resulted in 21 cases. In 7, other agents were given in addition to the thymophysin. In 7 cases the treatment failed.

In Group 4, thymophysin used alone gave negative results in 10 cases. Of 31 cases in which other agents such as oil quinine, and enemas, were used in addition a successful result was obtained in 21.

The author concludes from these and his previous results that thymophysin used alone is of no benefit in non toxic cases.

A summary of the results in Groups 1 and 4 shows that in 280 of the 424 cases of uterine inertia the

administration of thymophysin was followed by prompt and rapid delivery, in 110, there was prompt dilatation allowing surgical assistance, and in 34, the treatment failed.

Of the 76 cases in Groups 3 and 4, the use of thymophysin alone was successful in 21 and the use of thymophysin combined with other agents aided delivery in 28. In 20 cases, the treatment failed.

Of the total number of 500 cases, the use of thymophysin was successful in 301, aided delivery in 138, and failed in 61.

The author recommends an initial dose of from  $\frac{1}{2}$  to 1 c cm. If necessary, this may be repeated.

In from three to twelve minutes following the injection, a decided change is noted in the intensity, regularity, and length of time of the uterine contractions. Many of the patients whose cases are reviewed were delivered in thirty minutes, and the great majority were delivered before the end of an hour. The average time of labor was seventeen and one quarter hours. CHARLES F. DU BOIS, M.D.

**Balard, P.** The Place of the Low Cæsarean Section in the Treatment of Hæmorrhage Due to Placenta Prævia (La place de la césarienne basse dans la thérapeutique des hémorragies du placenta prævia) *Rev. franç. de gynéc. et d'obst.*, 1930, xxv, 110.

From a study of the results obtained in the management of forty eight cases of placenta prævia, Balard concludes that the low cervical cæsarean section is superior to non surgical procedures in the treatment of the hæmorrhage due to this condition. He divides his cases into two groups, twenty three representing the period from 1917 to 1927, during which time only non surgical treatment (artificial rupture of the membranes, the insertion of a bag, delivery by version and extraction) was carried out and twenty-five representing the period from 1927 to 1930, in which mild cases were treated by classical methods and severe cases by low cæsarean section. In the first group the maternal mortality was 16.6 per cent and the fetal mortality 69 per cent. In the second group there were two maternal deaths following non surgical methods and none following cæsarean section. Except in three instances in which fetal death occurred before the operation, the fetal mortality was nil after cæsarean section.

Balard does not advocate low cæsarean section as a routine procedure in all cases. He states that when labor can be rapidly and spontaneously terminated after artificial rupture of the membranes conservatism is advisable, but that cæsarean section should be done at once when, after artificial rupture of the membranes, the bleeding continues and lowered arterial tension indicates impending cardiovascular collapse. Cæsarean section is indicated also in cases in which the cervix is intact and the membranes cannot be ruptured easily.

In the cases reviewed, the maternal deaths were those of multiparæ. In Balard's opinion, this is explained by fragility and atony of the multiparous

cervix due to fibrosis following lacerations in previous deliveries and to the lower resistance to infection and hæmorrhage of multiparæ as compared with primiparæ.

Because of its hæmostatic effect in maintaining uterine contractions, the author advises spinal anaesthesia in all cases except those showing signs of cardiovascular collapse. For cases of hypotension, he prefers ether, believing that it causes a rise in the blood pressure. HAROLD C. MACK, M.D.

**Solomons, B.** Cæsarean Hysterectomy *Brit. M. J.*, 1930, i, 584.

Solomon believes that cæsarean hysterectomy has been done too frequently, less radical measures usually being safer as regards both the immediate and the remote results. He states that it is not indicated by antepartum hæmorrhage or by toxæmia, and is seldom indicated in cases of fibroids. A definite indication is carcinoma. He reports a case in which he performed the operation in the seventh month of pregnancy. He regards it as preferable to radium irradiation because of the danger to the fetus associated with the latter. Another definite indication is rupture of the uterus. Sometimes the operation is indicated also by antepartum sepsis. Solomons reports a case in which he performed it on account of infection which had traveled up the tract of a hough inserted fourteen days previously to induce labor. The results were good as regards both the mother and the child. HARRY M. NELSON, M.D.

## PUERPERIUM AND ITS COMPLICATIONS

**Leroux.** A Case of Acute Puerperal Peritonitis Operated on at About the Forty Eighth Hour and Cured, Advantages of a Mikulicz Drain Soaked in Gomenolized Oil (A propos d'une péritonite puerpérale aiguë opérée vers la 48<sup>ème</sup> heure et guérie, avantages du drainage à la Mikulicz, imbibé d'huile gomenolée) *Bull. Soc. d'obst. et de gynéc. de Par.*, 1930, ix, 115.

A peasant woman in the seventh month of her eighth pregnancy was admitted to the hospital for observation because of repeated severe hæmorrhages which suggested placenta prævia. Her general health was good, and she did not seem to have been weakened by the loss of blood. Seven days later she passed through an easy spontaneous labor lasting four hours and was delivered of a living child. Immediately after delivery she complained of violent pains in the lower abdomen, which were not relieved by the usual methods. On the following day the pains were less severe, but were localized in the right iliac fossa or the right side of the uterus, and the uterus was peculiarly hard. Muscular defense was absent. On the second day the condition became worse.

Laparotomy revealed generalized acute peritonitis arising from the right tube. The tube was removed, but the uterus was left in place. The tube was found to be filled with pus, but was little distended.



The base of a Mikulicz drain was placed behind the uterus, the gauze impregnated with 10 per cent gomenolized oil and the upper three fourths portion of the abdominal wound closed in three layers. The patient made an excellent recovery.

Attention is called to the remarkable latency of the salpingitis which had caused no symptoms previous to the labor in spite of the hard work to which the patient was accustomed. The massive inundation of the peritoneum was produced by expression of the contents of the suppurating tube which was squeezed between the uterus and abdominal wall during the contractions. Comment is made also on the latency of the onset of the puerperal peritonitis.

Leroux believes that soaking the gauze drain with gomenolized oil was of decided value but on this point Faure disagreed with him.

FLORENCE A. CARPENTER

### NEWBORN

Hess J H Chamberlain I Mck and Lundeen  
E C Premature Infants A Report of 761  
Consecutive Cases Pennsylvania M J 1930  
XXIII 479

Among 761 consecutive infants admitted to the Premature Infant Station at the Sarah Morris Hospital Chicago there were 38 which weighed more than 500 gm. One hundred and ninety two infants represented multiple births.

The place of birth apparently has a definite effect on the mortality. Among 181 infants born at home and transported to the Premature Infant Station the mortality was 45.3 per cent whereas among 218 which were born in hospitals the mortality was 23.9 per cent. The infants are transported to the Premature Infant Station in an electrically heated container.

The most striking clinical finding in the infants whose cases are reviewed was cyanosis. Continuous cyanosis was characteristic of atelectasis and cerebral hemorrhage. In infants with intermittent cyanosis autopsy disclosed infection in addition to cerebral hemorrhage. The authors warn against violence in attempts to resuscitate infants with cyanosis. The inhalation of aromatic spirits of ammonia and the hypodermic injection of 5 m doses of a 1:10,000 solution of adrenalin are recommended. The administration of oxygen by nasal catheter and the Henderson carbon dioxide oxygen apparatus is very effective. Spinal drainage also has proved of value.

Apathy was noted in all of the infants who died, but was most marked in those with intracranial hemorrhage. Sixty five per cent of the infants with infection showed little if any rise in the temperature. Marked jaundice in the first two weeks of life was usually associated with intracranial hemorrhage and infection. Vomiting distention and gastric irritability are common in premature infants. In the Premature Infant Station of the Sarah Morris

Hospital, regurgitation in the first few days of life is treated by reducing the food and withholding water between feedings. Small concentrated feedings are regarded as better than diluted milk mixtures. In the cases of infants with diarrhoea starvation is instituted for from twelve to twenty four hours. Weak tea is then fed every thirty minutes for the next twenty four hours and at the end of that time small feedings of equal parts of skimmed lactic acid and breast milk are given every three hours. Weak tea between feedings has replaced the subcutaneous administration of saline solution to a large extent. In the cases of dehydrated toxic infants the intramuscular injection of from 6 to 10 ccm of blood every other day is of value.

The authors discuss the examination of the cerebrospinal fluid by the technique of Glaser, in which a small hypodermic needle (No. 27) is used with the infant in a sitting position. Glaser concluded that the benzidin test on the supernatant fluid is positive in 50 per cent of cases of cerebral hemorrhage, that unrecognized cerebral hemorrhage probably accounts for some of the cases of so called physiological icterus and that a positive van den Bergh reaction of the spinal fluid is strongly suggestive of intracranial hemorrhage.

The Premature Infant Station of the Sarah Morris Hospital has a capacity of 22 beds. There is no special ventilation or humidity control. The beds are enclosed in electrically heated water jackets.

The feeding of the infants in this Station is summarized as follows:

1. Catheter feeding is resorted to when the drop per method precipitates attacks of cyanosis.
  2. Human milk is used whenever possible.
  3. Wet nurses being employed to make up for the deficiency of non productive mothers.
  4. Food is withheld for twelve hours in order that there may be no interference with the establishment of the function of the cardiorespiratory system.
  5. Light feedings are soon the usual daily routine, with water and weak tea between feedings.
  6. The usual requirements are from 140 to 180 ccm of breast milk per kilogram of body weight daily.
  7. Next to breast milk, lactic acid sweet milk mixtures are preferred.
  8. Orange juice, raw egg yolk, cod liver oil irradiated ergosterol and iron and ammonium citrate are recommended.
- Of the 761 infants admitted 286 died. Two hundred and three autopsies were performed. Intracranial hemorrhage was found in 80 cases, atelectasis in 112, bronchopneumonia in 49, marked icterus in 5, syphilis in 13, otitis media in 35, mastoiditis in 10, meningitis in 5, omphalitis in 3, peritonitis in 1, cellulitis in 1, pemphigus in 1, epicarditis in 1, hypertrophied thymus in 5, malformation in 20, hydrocephalus in 2, and atresia in 7.
- Of the 475 infants which survived 232 returned to the Clinic and 53 died subsequent to discharge.

The remainder were referred to private physicians, left the city, or could not be traced

It has been found that if prematurely born children sustain no undue injury before or after delivery, their mental and physical development corresponds favorably with that of children born at term

DONALD G. TOLLERSON, M D

Voron J., and Pigeaud, H. A Pathologico Anatomical Study of Fatal Intracranial Subdural Hæmorrhages of the Newborn of Non-Traumatic Origin (*Étude anatomo pathologique des hémorragies intra-cranienues sous-dure ménennes mortelles du nouveau né d'origine non traumatique*) *Gynec et obst*, 1930, xxi 12

Postmortem examinations of newborn infants which died from intracranial hæmorrhage showed that in 70 per cent the hæmorrhage was due to causes other than birth trauma, namely, congenital syphilis, maternal infection, and maternal toxæmia. The authors excluded trauma as a cause in cases in which the maternal pelvic measurements were normal and delivery occurred spontaneously, and in cases in which low forceps were used because of

uterine inertia or fetal indications. The demonstration of inflammatory changes in the brain (meningitis, encephalitis) was considered further proof that factors other than trauma were responsible for the bleeding. Hæmorrhagic areas and inflammatory changes in other organs such as the liver, spleen, and kidneys were considered evidence of a generalized hæmorrhagic disease of which the intracranial lesions were only one manifestation.

Tentorial tears, which occurred in 50 per cent of the cases, were attributed to distention of the tentorium by blood clots from hæmorrhage occurring during the process of moulding of the fetal skull during labor. The authors believe that their importance as a cause of death has been exaggerated, and that their presence does not imply birth injury. Many of the infants with congenital syphilis showed old subdural hæmorrhages which had their onset before delivery. The authors state that acute and chronic infections of the mother, toxæmias of pregnancy, and hereditary syphilis are important causes of blood vessel disease resulting in congestion and subsequent rupture of the vessels and failure of coagulation of the blood. HAROLD C. MACK, M D

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Puche J., and Bofill J. A Contribution to the Study of the Histophysiology of the Kidney (Contribución al estudio de la histofisiología del riñón) *Rev. méd. de Barcelona* 1930, vii, 66

In 1914 the author began experiments to determine whether he could find any histological changes in the kidney cells after operation which would explain operative insufficiency of the kidney. As he used dogs which are not very well adapted for experiments of this kind he recently repeated the experiments on white rats.

He found that operative insufficiency of the kidney in the white rat causes polyuria with increased excretion of the various constituents of the urine. In the later stages of the experiment the excretion of all of the constituents except water and ammonia decreased. In addition to other important structural changes the kidney with operative insufficiency showed argentophile granulation, of an elaborate type. The active tubules showed different phases of activity of the cells. In kidneys intubated with caffeine and sodium cyanide the argentophile granulations were changed or disappeared.

AUDREY G. MORGAN, M.D.

Roth E. J. H. and Wright H. W. S. Intravenous Pyelography. *Brit. M. J.* 1930, i, 778

Binz and Raeth experimented with selectan, neutral an organic compound of iodine with a high molecular weight, hoping it would be useful in coccal infections of the biliary and urinary tracts. Erbach found that this compound is excreted in part by the kidneys and suggested that it might show an X-ray shadow of the urinary tract. As the clarity of the shadow was variable and as the tolerance for the drug is not always good whether it is given by mouth or intravenously, Swick and von Lichtenberg suggested substituting sodium ethyl for a methyl group and slightly reducing the iodine content. The compound so produced is called 'uroselectan'.

Uroselectan is given intravenously dissolved in distilled water and roentgenograms are made a quarter of an hour, three quarters of an hour and one and a quarter hours after the injection. The rate of excretion of the drug bears a close relation to renal function. Frequently the shadow of the left kidney appears less dense than the shadow of the right.

As this drug is useful both in pyelography and in tests of function, Roth believes it will play an important part in urological diagnosis. Two disadvantages are its cost and the fact that no shadow is obtained when renal function is greatly diminished.

CLAUDE D. HOLMES, M.D.

Pieraccini, P. Hæmaturia in Hydronephrosis (Lematuria nell'idronefrosi). *Ann. ital. di chir.*, 1930, ix, 222

In hydronephrosis, slight hæmorrhage is not unusual but severe hæmorrhage is uncommon. The bleeding may occur during or after the acute attack. There is nothing especially characteristic about it; it looks just like the hæmaturia of kidney tumor.

The author reports a case of secondarily infected hydronephrosis with hæmorrhage which he attributed to congestion of the parenchyma, sclerotic glomerulonephritis, and small cell infiltration of the submucosa of the renal pelvis.

Hæmaturia in hydronephrosis has been ascribed to a vacuum congestion from increased pressure of the urine within the sac, venous congestion from interference with the circulation in the pedicle, sclerotic glomerulonephritis, and infection. All of these factors may cause it and any of them may be found in individual cases. There is no constant relation between the cause of the hydronephrosis and the blood in the urine, nor does the severity of the hæmaturia depend upon the severity of the hydronephrosis. The treatment of the hydronephrosis should be the same as in cases without hæmaturia.

AUDREY G. MORGAN, M.D.

Peracchia, G. C. The Effect of Stagnation of Urine on the Localization in the Kidney of Bacteria Circulating in the Blood (La influencia del estasis urinario para la localización renal de bacterias existentes en la circulación). *Clin. y lab.* 1930, xvi, 186

The author describes experiments in complete and incomplete occlusion of the ureter with infection by staphylococcus aureus, streptococci, colon bacilli, gonococci and tubercle bacilli which were carried out to determine the effect of the stagnation of urine on infection of the kidney. He found that only the staphylococcus had a direct action in causing renal sepsis and suppuration with the ureter completely or partially occluded. Occlusion or partial occlusion of the ureter brought about a condition of decreased resistance which rendered the kidney more favorable for the development of the bacteria.

The histological findings are described in detail and shown in photomicrographs.

AUDREY G. MORGAN, M.D.

Kretschmer, H. L. Tuberculosis of the Kidney. *New England J. Med.*, 1930, cclii, 660

This article is based on a series of 221 cases of tuberculosis of the kidney. Forty-three and five-tenths per cent of the patients had had a previous operation and in the cases of 47.7 per cent of these the previous operation had been done for tuber-

**tuberculosis** The operation most frequently performed for genito urinary tuberculosis was castration, which was done in 14 cases

Fifty six per cent of the patients were between the ages of twenty and thirty-nine years While tuberculosis of the kidney is uncommon in infancy, the author suggests that obscure chronic pyelitis in infants may sometimes be due to tuberculosis

Before a kidney is removed for tuberculosis it is essential to exclude tuberculosis in the other kidney In the cases reviewed, the condition was bilateral in 19.3 per cent

The author subjects all patients with renal tuberculosis to a complete physical examination, including a roentgen ray examination Evidence of lung involvement was found in 35.5 per cent of 180 cases Old healed lesions had no effect upon the operative mortality, but active lesions were taken into consideration in the choice of the anæsthetic

The best functional results were obtained in cases in which there was very slight or no involvement of the bladder These were the early cases In 121 cases, the symptoms were of only one year's duration In 69.6 per cent, they had been present for two years

The most common symptoms were frequency, nocturia, and hæmaturia Next most common were pain on urination, pain in the back, and loss of weight Frequency was present in 83.2 per cent of the cases

In 194 cases (87.7 per cent) the presence of tubercle bacilli was demonstrated by smears or guinea pig inoculation or both In 27 cases the diagnosis was made by flat plate or cystoscopic examination and was verified at operation or by autopsy While 2 cases were diagnosed by exploratory operation, the author does not recommend operative exploration as a substitute for urological study

In conclusion, Kretschmer says that he never accepts positive laboratory reports of the presence of tubercle bacilli unless he himself sees the bacilli He emphasizes that nephrectomy must be supplemented by general treatment for tuberculosis In ordinary bilateral tuberculosis, operation is contra indicated It should be done in bilateral cases only when an acute infection develops on one side, accompanied by a high temperature and a rapid pulse, pus is formed in the kidney, and the patient loses weight  
HARRY W. FLAGGMEYER, M.D.

Hepler, A. B. Solitary Cysts of the Kidney, A Report of Seven Cases and Observations on the Pathogenesis of These Cysts *Surg., Gynec. & Obst.*, 1930, 1, 668

The term "solitary" has been used to distinguish the large renal cysts of adult life from congenital polycystic kidneys and the multiple small retention cysts of chronic nephritis From a study of the reported cases Hepler has come to the conclusion that the lack of consensus in the classification of these cysts is due to the fact that large cysts in the kidney do not have a common histogenesis and

therefore differ in number, size, contents, sac wall, and associated renal disease He believes, however, that the mechanism of their production is essentially the same

In a review of 256 reported cases, Hepler found that the average age incidence of serous cysts is forty-five years and that of hæmorrhagic cysts forty-eight years The cysts are about twice as common in females as in males

In 25 cases there were remnants of renal parenchyma, atrophic tubules and glomeruli in the wall not only at the point of contact of the cyst with the kidney, but also in all portions of the sac This indicates that the wall was made up of compressed renal parenchyma with a connective tissue substitution which was not complete Although solitary cysts are defined as occurring in a kidney otherwise normal, definite pathological changes were found in the kidney in 82 instances

Numerous explanations of the origin of these cysts have been given According to one theory, they develop from embryonic rests, persistent cystic tubules in the embryo, or failure of union of the glomeruli and tubules, and are genetically related to polycystic kidney This explanation is discredited by the following facts 1 The disease is one of late adult life 2 The cysts are rarely found in children either at clinical examination or at autopsy 3 The symptoms usually begin suddenly 4 In many instances the growth of the cysts is comparatively rapid

According to another theory, the cysts are retention cysts and due to some undiscoverable obstruction in the tubules with active renal secretion continuing distal to the lesion The most common obstruction is assumed to be a localized inflammation with peritubular sclerosis and contraction This theory seems to be discredited by the fact that group tubular obstruction alone cannot cause these enormous dilatations

From experiments which he carried out on rabbits, Hepler concludes that the formation of the cysts is due essentially to intrarenal urinary back pressure produced by group tubular obstruction and parenchymal anæmia caused by involvement of an arterial branch in the region of the block process With active glomerular function continuing distal to the lesion, rapid dilatation takes place The surrounding kidney then undergoes compression atrophy and produces the connective tissue wall of the cyst The obstructive factor, whether it be obliterating endarteritis with peritubular sclerosis, atherosclerosis, infarct, tumor, or some other condition, is itself involved in the process, hence all gross evidence that it was concerned in the formation of the cyst is eventually lost

These large and usually solitary cysts of the kidney are acquired They do not have a common cause, but the mechanism of their production is essentially the same Recognized pathological conditions of the kidney produce them, but only when they are so situated as to cause a combination of group tubular obstruction and anæmic degeneration of the paren-

As there is danger of the development of stricture as a late sequela of the trauma, the patient should be kept under observation for some time. The author believes persons sustaining such injuries are entitled to compensation as they must be subjected to repeated urethral dilatation with its attendant inconvenience and discomfort.

HARRY W. FLAGGMEYER, M.D.

**Lowsley O. S. Preliminary Drainage in Cases of Vesical Obstruction with Particular Reference to Stricture of the Urethra. *J. Urol.*, 1930, VIII, 307**

The author claims that whenever the general condition is poor and prostatectomy is necessary for adenomatous hypertrophy, cancer or the relief of obstruction of the lower urinary tract it is advisable to do a preliminary suprapubic cystostomy for the following reasons:

1. Either suprapubic or perineal enucleation may be done following suprapubic drainage. Technical difficulty is no excuse for omitting it.

2. While the use of an indwelling catheter may improve the condition of the kidneys, the catheter is a foreign body in the prostatic urethra and favors the development of an inflammatory reaction with resulting edema.

3. Every adenomatous hypertrophy of the prostate is accompanied by pus in the prostatic tubules and the indwelling catheter prevents normal drainage of the prostatic ducts, thereby favoring an increase in the edema of the gland.

4. With congestion due to the indwelling intra-urethral foreign body there is also considerable absorption which prevents the improvement in the general condition that is obtainable with the other type of drainage.

5. Edema of the prostate favors bleeding on prostatectomy.

6. When suprapubic drainage is established the patient is clean and dry, the kidneys resume their normal functional efficiency, the edema of the enlarged gland is reduced, and enucleation is associated with less bleeding.

7. The suprapubic prostatectomy vaccinates the patient against the organisms he is harboring.

Suprapubic cystostomy with removal of stone from the bladder is supposed by some to be particularly precarious. In 39 cases in 25 of which the general condition was only fair, the mortality was 7.7 per cent.

The author is thoroughly convinced of the desirability of drainage as a preliminary measure also to vesical diverticulectomy.

Most surgeons do not drain the bladder suprapubically as a preliminary to operation for urethral stricture. While delay is inadvisable in the presence of acute periurethritis or phlegmon, in some cases much better results have been obtained when a preliminary suprapubic cystostomy was done before the operation on the strictured urethra. The two stage operation is indicated especially in the cases of

patients advanced in years who have a long standing obstruction with renal damage from the narrowed urethra. From his experiences in 12 cases of malformation of the urethra the author is convinced that suprapubic section is the drainage of choice in this condition also. In 2 cases of stone lodged in the urethra which were treated by preliminary drainage until the organs had reached their maximum efficiency good results were achieved.

Suprapubic cystostomy has definite value as a preliminary procedure to a more shocking operation. The mortality rate is surprisingly low considering the patients' age and the poor general condition usually associated with prostatic enlargement, urinary retention, and complete urinary obstruction. In 38 cases it was only 8.9 per cent. Fifty per cent of the deaths were those of men over seventy years of age, six of whom were over eighty years old.

LOUIS NEWELL, M.D.

**Morson A. C. The Pathology and Treatment of Carcinoma of the Penis. *Proc. Roy. Soc. Med.*, Lond., 1930, XXIII, 667**

There are two types of penile cancer—the ulcerative and the papilliferous. In the first type, phimosis and decomposition of smegma are the main factors, while in the second, the malignant changes are initiated by a wart. The clinical manifestations of carcinoma of the penis are very different from those of glandular carcinoma. The treatment is amputation or radium irradiation.

Circumcision is a most important preventive, but is not infallible. Any wart on the penis may be the forerunner of cancer. The malignant lesions are commonly multiple and are called "implantation growths."

The ulcerative variety of cancer is not an outgrowth; it eats the organ away. There is no evidence that venereal disease plays any part in the causation of the lesion, but there is always a history of phimosis and decomposition of smegma. Dirt is a most important factor in the etiology of both varieties of penile cancer.

A characteristic of the penile lesion is malignancy. A lump or ulcer remains painless for years until sepsis begins, when the glands in the groin enlarge and become tender and fever and wasting commence. The glandular enlargement results from adenitis and not from malignant metastasis. Sepsis is intensely virulent in the presence of cancer and it is the sepsis which causes death. The femoral artery usually ruptures from ulceration. Sometimes septic bronchopneumonia is the terminal condition, but no metastases have been found farther than the inguinal glands. It is characteristic of skin cancer that the squamous cells fail to penetrate beyond the nearest glands.

Penile cancer is three times as common in negroes as in whites. It occurs usually between the ages of forty and sixty years, but has been seen at the age of eighteen. The inguinal glands are involved in at least 60 per cent of the cases.

The melanotic cancer is preceded by a pigmented mole for many years. Without warning, it rapidly disseminates and has a fatal termination with multiple metastases.

Formerly, the treatment was amputation with extirpation of the inguinal glands. Today, the radium needle is frequently used instead of the knife. If complete amputation by the Gould method is done early, there should be no recurrence if the infection is limited to the adenitis.

In the radium treatment, the author uses platinum needles 0.5 mm thick and 22.5 mm long, containing 5 mgm of the element. He buries them 2 cm apart. They are left in place twenty-four hours the first time, and thirty-six hours at each subsequent treatment. The skin and testicles are protected with a lead plate. The implantation is done under anesthesia induced with ethyl chloride or novocain.

The changes begin in three days. When a dose lethal to the cancer is given the tumor disappears in two weeks. The complications are difficulty in micturition and stricture of the external meatus.

The author does not operate upon or irradiate the inguinal glands unless the covering skin is ulcerated. The dangers are lymphatic edema and extensive cellulitis. Surgeons usually prefer the Gould operation, but Morson chooses irradiation on account of the mental effect produced by the disappearance of the tumor and the preservation of the organ.

BENJAMIN F. ROLLER, M.D.

## GENITAL ORGANS

Lowsley, O. S. Embryology, Anatomy, and Surgery of the Prostate Gland. *Am J Surg*, 1930, viii, 526.

Embryological studies of the prostate were carried out by the author on fetuses varying in age from ten weeks to full term. The first specimen was 5 cm in length. The musculature of the bladder was carefully studied with particular reference to the neck of the bladder and the prostatic region, but no evidence of the development of the prostate was found until the third month of fetal life. Eventually the prostate had five lobes—a middle lobe, two lateral lobes, and a posterior and an anterior lobe.

The posterior lobe is of special interest to the surgeon because it is the most frequent site of carcinoma of the prostate. One of the most significant findings was the number of prostatic ducts with openings on the floor of the prostatic urethra. In most cases no fewer than fifty-three such ducts were found. Two specimens showed seventy-four, and the average for six specimens was sixty-three.

In the surgery of the prostate gland, three forms of preliminary drainage are used: fractional catheterization, drainage by retention catheter, and suprapubic drainage. By suction through a double tube the patient may be kept comfortable and dry. Drainage is followed by improvement in renal function. This is indicated by the results of the phenolsulphonphthalein test, cryoscopy, the in-

digocarmine test, the Mosenthal test, and the determination of various products retained in the blood.

The preparatory drainage is the most important part of the operation. Regardless of whether the gland is to be removed by the suprapubic or the perineal route, the author always establishes suprapubic drainage. The preoperative preparation should include also the forcing of fluids and, if necessary, blood transfusion.

Next in importance to drainage is the anesthesia used for the operation. Ether and chloroform are dangerous. Nitrous oxide oxygen is the best of the inhalation anesthetics, but is not entirely safe. The anesthesia of choice is sacral and parasacral anesthesia, which is satisfactory in 95 per cent of the cases.

The technique used by the author for the perineal operation does not differ much from Young's perineal procedure. Particular attention is paid to the removal of small nodules of prostatic tissue from the vesical orifice. Persistent fistulae never result if the perineum is reconstructed by a stitch drawing the two parts of the levator ani together.

For carcinoma of the prostate, Lowsley prefers operation to radium treatment, but usually applies radium to the bed of the prostate after the operation.

Prostatic abscess is generally operated upon by the perineal route.

Lowsley reports two cases of tuberculosis of the prostate in which the nature of the condition was not discovered until operation, and a case of prostatic hypertrophy with characteristics of Hodgkin's disease.

ELMER HESS, M.D.

Nickel, A. G., and Stuhler, L. G. The Prostate Gland as a Focus of Infection in Arthritis. *Med Clin North Am*, 1930, viii, 1519.

Arthritis due to focal infection is well known, as is also the association of the gonococcus with certain forms of arthritis. Recently the theory has been advanced that the prostate gland may be a focus of infection. Cultures were made in about 400 cases of arthritis in which the prostate gland was suspected to be a focus of infection. Seventy-one contained organisms with an affinity for the joints. The causative organism was usually a green producing streptococcus, but in a few instances it was a gram positive coccus resembling the staphylococcus albus.

The prostate gland has been found to be a definite focus of infection often enough to warrant its consideration as a possible focus in any male patient with arthritis. Local treatment of the gland so infected, sometimes supplemented with the use of an autogenous vaccine, often improves the general condition, especially if other foci are also treated.

Moench, G. L. The Technique of the Detailed Study of Seminal Cytology. *Am J Obst & Gynec*, 1930, xiv, 530.

The technique described is as follows:

The smear slides are air dried, fixed by heat, and then treated with a 1 per cent chloroform solution.

for from one half to two minutes. They are then washed with water and 95 per cent alcohol, dried, and stained with a modified *Williams stain* a mixture of Ziehl-Neelsen carbol fuchsin 50 parts a saturated alcoholic solution of (bluish) eosin, 25 parts, and 95 per cent alcohol 25 parts. When the slide is to be stained a few centimeters of the stain are put in a small container and carbol fuchsin is added drop by drop until a precipitate occurs and a metallic luster covers the surface of the fluid. The stain is then filtered and used on the slide for from one and one half to five minutes. The length of time depends on the depth of staining required. If the slide is blotted dry before the stain is applied, precipitation is less likely to occur. At the proper time the stain is washed off rapidly but carefully with water and a counterstain consisting of methylene blue diluted with distilled water to one third the usual strength is applied for from one to five seconds. If the slides are wanted for examination of the sperms under the microscope and the counting of abnormal cells the counterstaining is done more lightly, whereas when they are to be used for projection and measuring the sperm heads are stained a deeper color to make them stand out more prominently. If many slides must be made, it is perhaps wiser to stain the heads a reddish purple instead of blue using very dilute methylene blue, as the former is less fatiguing to the eyes.

The head stains purplish and darker at the base than anteriorly. The anterior end knob can often be seen set into the base of the head as a small red knob. The body and tail of the sperm stain a deep red. Usually from 500 to 1,000 cells are tabulated, but in difficult specimens it is often necessary to count 2,000 or more cells before a definite conclusion can be drawn.

The number of sperms present in a stained smear is not indicative of the number of sperm cells present in the original sample of semen. Even when the original specimen has numerous cells only a relatively few may appear in smears as many cells may be lost in the preparation of the slides.

The method used by the author for measurements is the one generally employed in such studies. The image of the spermatozoon is projected at a known magnification onto a miniature screen and then measured with bow dividers controlled by a thumb screw. The results are recorded by graph.

E. L. CORNFELL M.D.

Weisner, B. P. On the Re Activation of the Senile Testis of the Rat by Means of Injectors of Gonadotrope Hormones. *Edinburgh M J* 1930 *xxvii*, 229.

From experiments carried out on rats with regard to the relative action of oestrogenic extracts from the anterior lobe of the hypophysis and human placenta the author concludes that the senile testicle which is no longer spermatogenic and in which the endocrine function has declined can be reactivated by the injection of gonadotrope hormones.

This work is still in the experimental stage, and the most advanced age at which the senile testicle can be reactivated has not yet been determined. The author is of the opinion that the decrease of activity in the senile testicle is due to dysfunction or lack of function of the glands of internal secretion. He believes therefore that testicular grafts alone would probably be insufficient to overcome it but that extracts of endocrine glands such as the pituitary gland may induce renewed endocrine function and thus restore the function of the genital glands which depends upon testicular hormone.

J. SYDNEY RITTER M.D.

## MISCELLANEOUS

Heritage, L. and Ward, R. O. Excretion Urography. *Brit M J*, 1930 *i* 734.

The authors review previous attempts to perform excretion urography with drugs administered orally or intravenously, and report their results with uroselectan.

They inject into the median basilic vein 40 gm. of the drug dissolved in 100 c.c. of warm distilled water. In cases in which a slight leak has occurred into the tissues at the point of puncture no ill effects beyond slight local irritation and tingling have been noted.

The injection is best carried out on the X-ray table. The first roentgenogram is taken from five to ten minutes later. Subsequent roentgenograms are taken after half an hour, one hour, and two hours the bladder being emptied just before each exposure in order that its shadow may not obscure the lower part of the ureter.

When renal function is normal, a shadow of the whole urinary tract is obtained half an hour after the injection and persists for several hours. When renal function is subnormal the shadow shows a corresponding loss of density and its appearance is delayed. When renal function is severely impaired the shadow is not obtained until after from six to twenty-four hours or not at all. If the renal shadow is absent, no kidney is present on that side or the kidney is inactive or very severely damaged by disease. Such results are seen in pyonephrosis, advanced renal tumor and long continued obstruction of infected kidneys. Findings of this character demand further cystoscopic study.

Indications for intravenous urography are impassable obstruction of the urethra or ureters, severe hemorrhage, multiple urinary fistulae, the examination of small children, and cases of implantation of the ureters into the bowel. Contra-indications are advanced renal destruction, iodine idiosyncrasy, hyperthyroidism, and acute inflammatory renal disease.

The authors have found the procedure harmless. No patient has shown a reaction following the injection. The results are easily obtained and usually leave no doubt as to the condition present.

HENRY L. SANFORD M.D.

Krueger, A P, Faber, H K, and Schultz, E W  
Observations on the Bacteriophage in Infections of the Urinary Tract *J Urol*, 1930, xxiii, 397

The authors have made an exhaustive study of all of the work that has been done on bacteriophage. The literature reports numerous good results from bacteriophage treatment in bacillus coli bacilluria secondary to pregnancy, urinary calculus, bacillus coli septicæmia, and intestinal disturbances. No harmful effects have been demonstrable after the administration of the bacteriophage.

The authors studied eighty nine cases of urinary tract infection in which bacteriophage was used. They state that the bacteriophage is thought not to remain confined to the intestine, but to pass into the circulation, from there into the tissues, and thence

to the lesions containing the bacteria upon which it can exert its faculty of assimilation. The result is a bacteriophage *in vivo* with elimination of the invading microbe. However, their personal experience has not been such as to warrant any definite conclusions concerning the value of this treatment. They are particularly uncertain as to the value of bacteriophage in chronic infections of the urinary tract. They are of the opinion that in acute urinary infections, alkalization by mouth increases the virulence of bacteriophages naturally occurring in the urine by providing the optimal reaction for bacteriophage.

In conclusion they state that in the bacteriophage treatment of urinary infections they have not obtained the brilliant results reported by others.

MAURICE I MELTZER M D



# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Zanoli R. Renal Pseudorickets (Pseudo rachitismo renale) *Chir d organi di movimento* 1930 xiv, 539

The author reviews the literature on renal pseudorickets and reports two cases. His patients were boys sixteen and seventeen years of age who were underdeveloped sexually and physically with delicate skin a scanty panniculus adiposus meager distribution of body hair and normal pituitary fossae. The condition was characterized by urinary frequency nocturnal enuresis and changes in various bones resembling those of rickets. In both cases there was bilateral genu valgum. In one a large stone was found in the bladder.

The condition is known also as renal infantilism and renal dwarfism. ANTHONY R. CAMERO MD

Maxwell J P. Further Studies in Osteomalacia. *Proc Roy Soc Med Lond* 1930 xviii 639

Maxwell believes that osteomalacia and rickets are merely different manifestations of the same disease. In support of this theory he cites five cases showing a definite relation of osteomalacia in the mother to rickets in the child.

Osteomalacia results in the following three characteristic types of deformity:

1 Deformities of the spine and chest (a) with kyphoscoliosis and rotation and (b) with pure kyphosis. In deformities of the latter type which are rare roentgenograms show evidence of wedging and clubbing of the vertebrae at the site of the deformity.

2 Deformities of the pelvis (a) rotation (b) approach of the ischial tuberosities toward one another (c) an increase in the concavity of the sacrum with a tendency of the lower end to come forward and (d) a rolling in of the iliac crest which causes the iliac fossa to become narrow and deep. Occasionally pelvic deformity is caused by a pelvic fracture.

3 Deformities of the long bones (a) bending and (b) fracture. In many cases there are deformities of the chest and pelvis without involvement of the long bones but when the long bones are affected the pelvis and chest are usually also involved.

In discussing the relation of osteomalacia muscle spasm and tetany to the calcium and phosphorus content of the blood the author states that muscle irritability depends on the calcium ion concentration rather than on the total calcium content of the blood. It is his impression that the spasm, pain, and irritability of the muscles are a part of the disease.

He believes that when the ovary shows changes from the normal in osteomalacia, such changes are consequent upon and not the cause of, the disease.

In three cases of osteomalacia reported marked improvement followed the administration of cod liver oil and calcium lactate.

Maxwell urges early recognition and treatment of osteomalacia. RUDOLPH S. REICH MD

Jaffe, H L. Resorption of Bone. A Consideration of the Underlying Processes Particularly in Pathological Conditions. *Arch Surg* 1930 xi 355

Resorption of bone may be caused by osteoclasts or by blood vessels and granulation tissue. Osteoclastic resorption plays only a small part in the more fulminating inflammatory bone diseases.

Vascular resorption is the result of widening of the vessel canals known as Volkmann's canals, a process which rapidly reduces the amount of bony tissue.

Following a description of the vessel canals of normal bone the author discusses the changes in the vessel walls during resorption, the formation of new canals in resorbing bone, the changes occurring in the marrow during vascular resorption, the mechanism of vascular resorption, and the relation of bone cells to vascular resorption.

With regard to osteoclastic resorption he discusses the origin of osteoclasts, the foreign body giant cell conception of osteoclasts, the morphology, function, and fate of these cells, the relation of Howship's lacunae to osteoclasts and to bone cells. ELVEN J. BERKEHEIMER MD

Phelps W M. Specificity of Light Action in Tuberculosis. *J Bone & Joint Surg* 1930 xii 253

Fardee H. Carbon Arc Light Treatment in Bone and Joint Tuberculosis. *J Bone & Joint Surg* 1930 xii 270

PHELPS reports experimental work on the specificity of various wave lengths of light, especially those between 330 and 380 millimicrons. He uses the term 'light' to include the infrared and ultraviolet rays as well as the visible rays.

The best source of light is, of course, the sun. All artificial sources are less dependable and less constant. The carbon arc light varies with the type of carbon and the amount of current. The quartz lamp produces a large amount of ultraviolet light but this varies markedly with the age of the burner and its spectrum is a line spectrum producing large quantities of certain groups of waves and very small quantities between these groups.

In order to establish more scientific criteria for dosage in sun treatment a thermopile was set up on the roof of the building where treatments were given and the gram calories per square centimeter per minute were recorded for different weather conditions. With these records as a guide, the period length of

exposure was varied so as to give the same dose at each treatment. This system will not work for the artificial sources of light.

The results in thirty-four cases of joint tuberculosis treated with light are tabulated. In general, they are good. There were only two deaths, both due apparently to pulmonary involvement. The patients were treated by heliotherapy supplemented in most cases by carbon arc light. No local heliotherapy was given. The most striking effect was the closing of the sinuses. In many cases there was a fairly good return of function in the joints. These results demonstrate what can be done at sea level where the short ultraviolet rays (with a wave length below 320 millimicrons) are absent.

Of the artificial types of light, that of the carbon-arc lamp most nearly approaches sunlight. Its spectrum extends from about 385 to 500 millimicrons and the heat produced amounts to 1 gram calorie per square centimeter per minute at a distance of 1 meter. These figures vary with the amperage employed.

An experiment with six guinea pigs showed that irradiation with the carbon arc tended to prolong the life of the animals after they had been inoculated in the peritoneal cavity with tubercle bacilli. The three animals which were irradiated lived fifty, fifty-nine, and sixty-five days respectively, whereas the three that were not irradiated lived only forty-one, thirty-two, and forty-eight days.

Phelps concludes that heliotherapy can be given in sea-level cities as well as elsewhere, and that of the artificial substitutes for sunlight the light of the carbon arc is better than that of the mercury-vapor arc because it lacks the rays which cause tanning and erythema (wave lengths of from 300 to 320 millimicrons).

PARDEE reports the results of the practical application of the carbon arc lamp in the Children's Hospital School, Baltimore. The treatments were given *en masse* to children with tuberculosis of bones and joints. The patients, on Bradford frames, were placed in a circle under the lamp, each frame on an angle so that each patient received the rays from the lamp at a right angle with the body line. The treatment was begun with irradiation for only half a minute on the legs. If no erythema resulted, the regular schedule of irradiation for one minute on the front and back and an increase of one minute a day was carried out. The maximum dose was fifteen minutes each on front and back.

Twenty-two children were treated five times a week for five months. During this period three patients showed an average increase in hemoglobin of 9 per cent, ten, an average increase of 7.7 per cent, and five, an average increase of 4.2 per cent. Two showed a decrease of 2 and 6 per cent respectively, and two showed no change. Twelve patients with blood counts below 4,000,000 showed an increase of from 250,000 to 300,000 cells, two, a decrease, and one no change. Of seven whose original count was above 4,000,000, six showed a slight decrease and one

a slight increase. In a comparison of weights before and after the treatment it was found that nine patients gained from  $\frac{1}{2}$  to 134 lb., four gained from 2 to 4 lb., one showed no change, and four lost from 1 to  $1\frac{1}{2}$  lb. The general appearance and temperament of the children were noticeably improved. Taking all of the criteria into consideration, the author concludes that sixteen of the children showed definite improvement, three, slight improvement, two, no change, and one, a change for the worse. The roentgenograms indicated improvement in seventeen cases. This was evidenced by an increased deposit of lime salts, sharpening of the outlines of the bones, and, in the spinal cases, the absorption of necrotic vertebral bodies with fusion of the vertebral bodies adjacent to them. In two cases the roentgenograms showed a change for the worse, and in three cases the data were insufficient for any conclusion.

In general, brunette children showed more improvement under treatment with the carbon arc lamp than blonde children.

WILLIAM A. CLARK, M.D.

Campani, M. A Study of the Skeleton in Tabes and Syringomyelia (Contributo allo studio dello scheletro nella tabe e nella siringomielia). *Radiol med*, 1930, XVII, 294.

The author describes a number of cases of osteoarthropathy in syringomyelia and tabes which he studied roentgenologically, and then reports the results of a study of the skeletons of eight nonarthropathic tabetics. His findings seem to indicate that there is a pre-arthropathic stage, for some parts of the skeleton showed changes which might explain the arthropathy and the fractures frequently occurring in cases of tabes. The roentgen appearance of these bone and joint changes seemed to show some relation to that of Axhausen's arthritis deformans, but as it was not constant, it appears probable that the spirochæta may cause or complicate the lesions. The lesions are of at least two types.

AUDREY G. MORGAN, M.D.

Elision, E. L., and North, J. P. Osteitis Fibrosa Case Reports Suggesting a Traumatic Origin. *Ann Surg*, 1930, xci, 833.

The authors agree with Geschickter and Copeland that giant cell tumor, osteitis fibrosa, and solitary bone cyst are stages of a single process and have the common primary factor of trauma. They state that the theory of an inflammatory origin has many facts against it. Cultures taken at operation are always sterile and small round cells are conspicuously absent from the histological picture. No case of deep or superficial suppuration has been recorded. Pain and swelling are usually absent. In some cases there are no symptoms at all, the lesion being discovered only incidentally, at roentgen examination. The clean healing that follows fracture or operation could not occur in an infected bone.

The theory of a neoplastic origin is refuted by the fact that there is no hyperplasia of tissue normal to

the region and no overgrowth of abnormal embryonic elements

Trauma however is mentioned in the great majority of case histories. Moreover, the site of the lesion is usually at a point most easily injured e.g., near the greater tuberosity of the humerus at the lower end of the radius, at either end of the tibia, and at the great trochanter in the femur. The sequence in the pathological process may be as follows: trauma-hemorrhage into the cortex, extension of blood into the cancellous bone, and invasion by giant cells (which are normal, present near the epiphyses) into the channel produced by the hemorrhage where they proliferate more than the fibrous tissue, thus producing a giant cell tumor. If the lesion starts more toward the shaft where giant cells are not numerous the fibrous growth may not completely fill in the space left by degeneration and a bone cyst results.

At operation an elevated eburnated cortex may be found overlying a homogeneous area of soft brown tissue or there may be an encapsulated cystic growth with fluid contents which can be shelled out easily from under a thin bony covering. Trabeculae seen in the roentgenogram are not found at operation, the trabecular appearance being due to inequalities in the thickness of the cortex.

The authors report four cases in which a traumatic origin was suggested.

The first case was that of a boy seven years old who sustained a fracture through the neck of the humerus at the site of a giant cell tumor. Union resulted in about three weeks. A year later roentgen treatment was given for periosteal bulging. Four years later the lesion appeared to be healed.

The second case was that of a boy seven years old who developed a painful growth near the shoulder two months after a fracture of the upper end of the humerus. The roentgen diagnosis was osteitis fibrosa cystica. At operation fibroblastic tissue with giant cells in various areas was found. Complete recovery with bony union resulted. There has been no recurrence in four years.

The third case was that of a boy of eight years who developed weakness and swelling near the shoulder about a week after striking the shoulder in a fall. The roentgen diagnosis was giant cell tumor. Irradiation at intervals for eighteen months was followed by operation. An encapsulated cyst containing bloody fluid was removed intact. Cultures from the cyst contents showed no growth.

In the fourth case that of a woman thirty years of age an area of rarefaction appeared in the lower end of the tibia following trauma and pain in this region persisted from the time of the injury until operation six months later. Soft brown granular material was evacuated from beneath an eburnated cortex. The pathological diagnosis was osteitis fibrosa cystica. About two months after the operation the roentgenogram was negative and the patient was free from symptoms.

In the discussion of this report DOUGLAS said that the weakest theory of the cause of these bone changes

is the theory of infection. He believes that trauma may be a cause in some cases, but in others it merely calls attention to a lesion already present. He stated that the differential diagnosis from malignant growth may be difficult, but trabeculation seen in the roentgenogram is very good evidence against malignancy.

WILLIAM A. CLARK, M.D.

Sosman M. C. Xanthomatosis (Schueller's Disease Christian's Syndrome) Report of Three Cases Treated with the Roentgen Rays. *Am J Roentgenol*, 1930, xxiii, 581.

Under the term "xanthomatosis" Rowland included several diseases characterized by faulty lipid metabolism, among which are the syndrome of "defects in the membranous bones," diabetes insipidus and exophthalmos ("Gaucher's disease," Pick-Niemann disease (lipoid histiocytosis), xanthoma, xanthomeloma, and xanthelasma. Rowland believes that these processes start with a disturbance of lipid metabolism which allows the accumulation of excess lipids in the body, the excess being stored in the phagocytic cells of the reticulo-endothelial system. A hypercholesterolemia or a traumatized or suppurating area is essential. A characteristic histological finding is the histiocyte filled with lipid, the so-called "foam cell." In the inactive stages a replacement fibrosis may prevent the discovery of foam cells, only giant cells and fibroblasts remaining. Probably many of the various lesions described as "myeloid sarcoma," "myeloid endothelioma," "myeloid xanthoma," "giant cell tumor," and "giant cell sarcoma" are lesions of this disease in various stages.

This article deals with three cases which the author believes presented the syndrome described by Schueller as "peculiar skull defects in youth" and "dysostosis hypophysaria" and by Christians as "defects in membranous bones, diabetes insipidus, and exophthalmos."

The condition is first suggested to the roentgenologist by peculiar, irregular defects in the bones usually those of the skull, but sometimes the pelvic bones, the ribs, the vertebrae, or the long bones. Other characteristics particularly in children, are gingivitis with loosening of the teeth, jaundice from involvement of the Kupfer cells of the liver, retardation of growth and malnutrition. The diabetes insipidus results from cholesterol deposits in the bones near the pituitary gland and the exophthalmos from destruction of the roof of the orbit by a similar process.

The most frequent findings in the reported cases were defects in the bones of the skull. However, these may be absent as in Niemann-Pick disease. They involve the inner more than the outer table of the skull and present distinct, clean cut, but irregular outlines. They may suggest metastases or syphilis. There is no tumor corresponding to the defect, but a soft swelling may be palpable.

The treatment is still largely theoretical. Spontaneous remissions have been known to occur. A diet low in fat, desiccated thyroid or anterior pituitary

gland given by mouth or injection, insulin with a high caloric diet, and ultraviolet irradiation of the patient and his food have been tried with more or less success.

The main purpose of this article is to discuss another method of treatment, namely, roentgen irradiation of the lesions. In three cases reported by the author which were treated with the roentgen ray the skull defects were healed, at least temporarily, and the general condition was improved. In two of these cases other methods of treatment had proved unsatisfactory.

The prognosis is much better than in neoplastic disease. Roentgen treatment seems to be of value especially in the cases of children.

CHESTER C. GUY, M D

Copeland, M M, and Geschickter, C F. The Nature of Ewing's Tumor. *Arch Surg*, 1930, xx, 421.

This article is based on 60 Ewing's endothelial myelomata which were found among 400 malignant tumors of bone studied in the Surgical Pathological Laboratory of Johns Hopkins Hospital, Baltimore. Ninety five per cent of the tumors occurred in the first 2 decades of life. The ratio of males to females was 2:1. The long bones, which are most subject to trauma, were involved most frequently. The average length of time between the injury and the onset of symptoms was five and a half months. The chief symptom was pain. In the early stages the pain was sometimes intermittent, but later it became constant and especially severe at night. In 90 per cent of the cases a mass could be palpated. Vasomotor changes gave the skin a red or bluish tint.

Of the malignant tumors of bone, Ewing's sarcoma causes pathological fracture less frequently than the others. The average temperature in cases of Ewing's sarcoma is 100 degrees F. The leucocytosis associated with this neoplasm suggests osteomyelitis. The roentgenogram shows that Ewing's sarcoma is often diffuse and located near the middle of a long bone. It causes expansion of the shaft with widening and increased density of the cortex and mothgating of the marrow cavity. New bone formation and bone destruction are secondary to infiltration of bone by the tumor. In the early stages, bone production predominates, but later there is both medullary and cortical destruction.

On macroscopic examination, the widened cortex is found to be made up of subperiosteal and endosteal new bone formation. In its early stages the tumor appears to infiltrate rather than to destroy bone. The subperiosteal reaction of new bone formation occurs both parallel with, and at right angles to, the cortex. The parallel deposits appear to be a bony proliferation from the subperiosteum and cortex, giving an "onion peel like" formation.

Microscopic examination shows the cells in compact areas to be small and polyhedral. There is little pleomorphism. Multinucleated cells of tumor origin have not been noted.

Of 52 patients treated for Ewing's sarcoma who have been followed up, 43 are dead and 8 are living and apparently well after an average period of seven and two thirds years since the initial symptoms. The results of the different types of treatment were as follows:

Amputation or resection with irradiation. The average length of life after the operation was twenty-nine and two tenths months. Three patients are well after an average of five years and seven months.

Amputation or resection without irradiation. The average duration of life was more than twenty months. Four patients are well after six years.

Irradiation alone or with exploratory operation. The average duration of life was twenty-seven months. One patient is well after fifty-three months.

ELVEN J. BERKESEER, M D

Conte, E. Articular Chondromatosis (La chondromatose articulaire). *Radial med*, 1930, xvii, 237.

Conte reports three cases of articular chondromatosis with involvement, respectively, of the hip, knee, and elbow. He states that the cartilage bodies in this disease are probably due to the development of aberrant rests of cartilaginous tissue. The most frequent site of the bodies is at the point where the synovia joins the bone. Aberrant mesenchymal rests are most apt to be found at the point of transition from one kind of tissue to another. It is not known what causes them to begin to develop. A history of trauma has been given in about 50 per cent of the cases, but a relationship between trauma and chondromatosis has not been definitely proved. In a case reported by Rehn, free bodies in the joint were demonstrated on roentgen examination three days after an injury, accordingly, they must have been present before the trauma was sustained. Sometimes there are only small nodules of cartilage in the synovia, sometimes extensive cartilaginous plaques, and sometimes cauliflower vegetations. In some cases free joint bodies develop later. The joint most often affected is the knee.

The symptoms of articular chondromatosis vary. The beginning of the condition is gradual. The patient experiences slight pain and difficulty in using the joint, but is able to work. The difficulty increases when free joint bodies form or the synovia becomes thickened. In the most advanced stage there is complete or almost complete ankylosis in a position of flexion or extension, whichever is the least painful. Sometimes an initial period of pain and limitation of movement is followed by a period of adaptation in which there is a decided contrast between the marked objective findings and the degree of functional usefulness of the joint. The severity of the pain depends on whether nerve trunks are compressed by the cartilaginous vegetations. The only sign noted on inspection is atrophy of the muscles. In advanced cases, the joint masses can be felt on palpation. Palpation in the early stages reveals slight crepitation. A definite diagnosis can be made by roentgen examination after a certain

degree of ossification and calcification of the cartilaginous structures has been reached

Moulouguet and others say that chondromatosis cannot be differentiated from arthritis deformans, but the author holds that this differentiation is possible. He has found that the appearance of the synovia and joint heads differs distinctly in the two diseases. In chondromatosis, the joint cartilages are intact whereas in arthritis deformans they are thinned, deformed and surrounded by marginal exostoses. The presence of small osteophytes in the synovial recesses in chondromatosis is explained by a complicating arthritis. The bones are changed in arthritis deformans but not in chondromatosis. In chondromatosis the removal of the free bodies or vegetations is almost always followed by cure, but in arthritis deformans the process continues to develop. Conte believes that the chemical, roentgen, and pathological findings all show that chondromatosis is an independent disease.

AUDREY G. MORGAN, M.D.

Mason M. L. Rupture of Tendons of the Hand with a Study of the Extensor Tendon Insertions in the Fingers. *Surg. Gynec. & Obst.* 1930 1: 611.

Subcutaneous rupture of tendons of the hand is of infrequent occurrence because of the great tensile strength of tendon tissue. The extensor tendons may break at their point of insertion into the distal phalanx as the result of injuries such as are often sustained on the baseball field. The rupture follows a sudden blow on the tip of the extended finger. A typical drop finger tip results. This may be treated by splinting in hyperextension for from four to six weeks or preferably by operation.

The same type of trauma may lead to a tear of the extensor insertion into the base of the middle phalanx of the finger. Because of the attachments of the lumbrical and interosseous muscles into the tendon at this point the lateral divisions of the tendons are pulled volarward, thus leading to a typical finger deformity in which the terminal interphalangeal joint is held in extension because of tension of the lumbrical interossei tendons while the proximal interphalangeal joint is held flexed. To reestablish function it is necessary to reattach the tendon to the middle phalanx and suture the lateral slips to the central slip.

The tendon of the extensor pollicis longus ruptures occasionally at the point at which it passes distally from under the dorsal carpal ligament. The rupture follows weakening of the tendon due to constant rubbing against the ligament such as may occur in certain occupations (e.g. that of the drummer). It may also follow Colles fracture in which case it is probable that the original injury led to an aseptic necrosis of the tendon.

The dorsal and volar tendons may be involved in disease processes which lead to so called spontaneous rupture. Of the numerous disease conditions which may affect the tendons, tuberculosis appears to be the only frequent one which may lead to rupture.

Nearly 50 per cent of cases of tuberculosis of the tendon sheaths show involvement of the tendon with actual or impending rupture. The involved tendon tissue must be removed and may be replaced by a tendon graft. In the taking of the graft it is important to remove sufficient paratenon with it to insure its viability.

The flexor tendons rarely rupture except in such conditions as tuberculous tenosynovitis. Two traumatic ruptures are recorded. In one case, the flexor digitorum profundus of the middle finger ruptured following a blow from a swift baseball. In the other, the flexor pollicis longus was ruptured when the patient was putting on his overshoes. Operative repair of this injury may entail the use of a tendon graft.

## SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC.

Harbin, M. and Moritz A. R. Autogenous Free Cartilage Transplanted into Joints: An Experimental Study. *Arch. Surg.* 1930, 83: 883.

This report is based on thirteen experiments in which two pieces of joint cartilage were removed from one knee of a dog and inserted into the joint space of the other knee. One piece of cartilage was encapsulated in collodion while another was inserted unencapsulated. The capsule permitted diffusion of inorganic salts in solution but not the diffusion of protein.

In most instances the transplant was left in for about a month but in one case the time was a little over six months. In the latter, no trace of the transplant could be found when the joint was opened.

The transplants in the capsules did not proliferate or form connective tissue coverings as did the free pieces although on microscopic examination their cells seemed to be living. In some cases the capsules were defective and the cartilage within them showed fibrous metaplasia of varying degree.

The results on the whole seemed to indicate that free cartilage loose in a joint cavity will survive as long as a month apparently deriving nourishment from the synovial fluid. This may explain how joint mice are produced and how they increase in size.

WILLIAM A. CLARK, M.D.

Dainelli M. Arthroplasty with Fixed Aponeurotic Strips (Artroplastica con lembi aponeurotici fissili). *Chir. d'organi di movimento* 1930, IV, 555.

In experiments on adult rabbits, the author performed twenty five arthroplasties with the interposition of fixed fascia lata. Strips of fascia obtained in such fashion that neither fat nor muscular tissue remained adherent to them were washed for a short time in running water then placed in 10 per cent formalin for five or six days and then transferred to 60 per cent alcohol. In fifteen instances the articular cartilage was cut away and the subchondral bone denuded with a knife before the arthroplasty. In ten instances this was done with the galvanocautery and, in addition, some of the bone adjacent to the carti-

lage was included in the destruction. After the operation roentgenograms of the joints were taken at intervals throughout the experimental period. The animals were killed from time to time and the structure of the joint studied histologically.

It was found that the aponeurotic strip acted only as a mechanical means of preventing the bony surfaces from coming into contact and healing. The fixed fascia was absorbed within from thirty to forty days, but not before the articular head was covered over with fibrous tissue to such an extent that ankylosis was impossible. Repair of the articular heads was the result of cartilaginous metaplasia permitting almost perfect restoration of structure and function.

ANTHONY R. CAMERO, M.D.

**Frazier, C. H. Spasmodic Torticollis: Interruption of the Afferent System Alone in the Treatment.** *Ann. Surg.*, 1930, xii, 848.

According to Foerster, the most common causes of spasmodic torticollis are lesions of the globus pallidus and corpus striatum. Interruption of the extrapyramidal corticofugal pathways, which pass through the globus pallidus to the muscles, leads to the "pallidum syndrome" with its characteristic disturbances of motility, including a rigid torticollis. Torticollis of striatal origin is characterized by a slow and irregular intermittent cramp of the head rotators. The corpus striatum serves as an inhibitory apparatus of the thalamopallidary reflex arch. For the development of spasmodic torticollis of any type a pre-existing deficiency of this inhibitory mechanism is necessary.

Following Sherrington's studies on decerebrate rigidity, McKenzie, in 1924, suggested that muscle spasm in torticollis might be relieved by section of the posterior roots.

If it is true that plasticity or muscle tonus is under the control of the dorsal roots and that the corpus striatum serves normally as an inhibitory apparatus, an operative procedure may be formulated upon a physiological basis.

An operation was suggested by Keen in 1890, by Foerster in 1918, by Finney in 1921, by McKenzie in 1924, by Sicard in 1927, and by Foerster in 1928. Operative treatment requires an understanding of the muscles involved and their nerve supply. The sternocleidomastoid, the upper portion of the trapezius, the splenius capitis and cervicis, and the rectus capitis posterior major and minor are all concerned and are variously supplied by the first four cervical and the spinal accessory nerves. The involvement may be bilateral.

Because of the great technical difficulties of the extravertebral resection, an intradural operation is recommended by Frazier. In this procedure, the usual occipital approach is made, the posterior rim of the foramen magnum is resected away, and the spine and laminae of the three upper cervical vertebrae are removed. The dura is then opened and the roots are exposed. The first three posterior roots on one or both sides and the spinal accessory nerve are

crushed or divided. Such an operation gives relief and is devoid of risk.

In the discussion of this report, STOOKEY traced the history of spasmodic torticollis and stated that the greatest advance in its treatment was made by Keen in 1890. He emphasized that two major types of the condition must be differentiated—that produced by changes in the muscles or vertebrae and that brought about by a lesion of the neural mechanism. Surgical procedures also are of two types—those designed to treat the local condition by tenotomy or myotomy and those intended to interrupt the neural impulses. Stookey believes that insofar as the cervical nerves are concerned, the attempt to destroy the neural arc by sectioning the afferent system alone is a decided advance in the treatment.

FRANK B. BERRY, M.D.

**Dunn, N. Reconstructive Surgery in Paralytic Deformities of the Leg.** *J. Bone & Joint Surg.*, 1930, xii, 299.

In deformity following infantile paralysis, power is deficient in one or more muscles or groups of muscles, there is usually a contracture of the stronger muscle groups, the deformity is generally aggravated by persistent posture and by weight-bearing, and recovery of the overstretched muscles depends upon appropriate treatment in a relaxed position for a prolonged period. The methods of treatment include gradual correction, forcible correction after the division of tight structures, and bone operations supplemented, in some cases, by tendon transplantation or tenodesis.

Dunn emphasizes that division or elongation of a tendon or muscle to correct deformity in infantile paralysis should not be attempted unless it is certain that correction of the deformity will improve function, that division or elongation of tendons is necessary to correct the deformity, and that the power of the shortened muscle or tendon cannot be utilized by tendon transplantation at the time of operation.

For cases of deformity of the hip or knee, Dunn urges the gradual correction recommended by Hunt. He states that operation is seldom necessary to correct flexion contracture of the hip in infantile paralysis. He performs tenotomy of the fascia as a preliminary to gradual correction only in very severe cases of long standing. The principles of the Hunt method for deformity of the hip are:

1. Correction of lordosis by flexion of both hips while the spine and one flexed hip are immobilized in plaster of Paris.

2. Fixation of the free limb in a Thomas knee splint, which is gradually lowered as the tight structures yield to extension and gravity.

3. Incorporation of the limb in which the deformity has been corrected in plaster with the spine and gradual extension of the other limb.

The same general principles apply to deformity of the knee and foot. In rare instances, lengthening of the tendon of Achilles is advisable, but in cases of quadriceps insufficiency a slight equinus is of value.

For simple *cavus* deformity of the foot in children and young adolescents, Dunn advises forcible correction. After division of tight structures near their attachment to the os calcis he uses the Thomas wrench to obtain the necessary leverage.

In some cases of paralytic deformity of the leg, arthrodesis of the hip or knee may be desirable to increase stability or reduce splintage.

For cases of deformity of the foot in which reasonable function without an increase in the deformity cannot be obtained by simpler methods, Dunn recommends arthrodesis of the midtarsal or subastragaloid joint or of both by his own technique. He emphasizes that care must be taken to immobilize the tarsus in the proper position to insure weight bearing on the posterior aspect of the os calcis and the first and fifth metatarsal heads.

In simple *varus* deformity, removal of bone and division of ligaments should be such as to allow easy correction of adduction at the midtarsus and *varus* of the heel.

For simple *valgus* deformity, Dunn advises division of ligaments and free dislocation of the foot inward at the midtarsal and subastragaloid joints before the removal of bone. Special care must be taken to enter the os calcis under the astragalus and to assure weight bearing on the first as well as the fifth metatarsal head.

In simple *cavus* deformity, midtarsal arthrodesis is usually sufficient provided there is normal control of the astragalus and os calcis.

In equinus deformity, the tendon of Achilles should be lengthened if necessary.

In calcaneocavus, the complete Dunn operation with tendon transplantation with or without arthrodesis gives good results. In the fixation of the foot, care must be taken to assure weight bearing on the first and fifth metatarsal heads.

The success of tendon transplantation depends upon whether the transposed tendon will perform its function naturally or can be easily educated to perform it and upon the degree of tension with which the new tendon is sutured. The author believes that in tendon transplantation in the lower extremities a tendon or part of a tendon should be used only to replace one of its own group. He therefore advises against transplantation of the biceps into the patella in quadriiceps paralysis. Instead, he recommends the use of the sartorius or the tensor fasciae femoris. For the foot, he strongly urges physiological transplantation.

Dunn considers arthrodesis of definite value. In cases of calcaneocavus with impairment of the function of the calf muscles, he often uses a portion of the tendon of Achilles to maintain the position of slight equinus. RUDOLPH S. REICH, M.D.

Bailey, H. Diaphysectomy and Primary Suture for Acute Osteomyelitis of the Fibula. *Brit. J. Surg.* 1930, LVII, 641.

Bailey reports four cases of acute osteomyelitis of the fibula in children from six to twelve years of age.

Rapid recovery followed early diaphysectomy; the first case a piece of the upper end of the diaphysis was left and six months later was removed as sequestrum. In the three later cases, complete periosteal removal followed by swabbing with flax and closure of the wound with a drain led to healing in three weeks. The children were able to walk before the fibula regenerated and no disability resulted. WALTER P. BLOUNT, M.D.

Campbell, W. C. Bone Block Operation for Drop Foot, Analysis of End Results. *J. Bone & J. Surg.* 1930, XL, 317.

The author's bone block operation for drop foot, which was reported in 1923, has been employed in 300 cases. Alone or combined with other operations it is used in numerous foot deformities. It is performed on children under eight years of age.

About  $\frac{1}{2}$  in. of the posterior extremity of the astragalus is removed. The subastragaloid joint denuded of cartilage, and a cavity is made in the calcus on a line with the posterior articular surface of the tibia. Spongy bone is obtained from any convenient source, usually from the forefoot during lumbar stabilization. A large piece of this bone is placed in the cavity of the os calcis and other pieces are packed in a pyramid about it so that the resulting mass impinges on the inferior and posterior aspect of the tibia. The foot is then placed in a plaster cast at an angle of 90 degrees with the leg, as when in position is employed plantar flexion of about 10 degrees is secured later. The cast is left on for 6 weeks. After removal of the cast a brace is used six months to prevent plantar flexion until the complete organization of the transplanted bone.

The end results of the operation in 225 cases have been carefully studied. They were found to be usually the same in children and adults. The clinical results and those demonstrated by the roentgenogram usually coincided though not always. Absorption of the graft occurred in only 1 case. Bleeding was efficient when impingement was intra-articular and extra-articular, but was good also when block struck either the posterior portion of the tibia or the articular surface alone.

Of the 225 cases, an efficient bone block was attained in 21. Pain in the heel occurred in 40, and late fracture of the graft in 1 case. On roentgenographic examination in 133 cases a well developed osseous process, as found in 133. Osteoarthritis of the ankle joint was never observed following operation. WALTER P. BLOUNT, M.D.

## FRACTURES AND DISLOCATIONS

Hinton, J. W. Occupational Therapy in the Treatment of Fracture of the Joint. *Arch. Surg.* 1930, LX, 91.

Occupational therapy rather than physiotherapy was used in the treatment of 61 joint fractures. Light work was begun early. The methods used shown in illustrations. The results were better than

those obtained in similar cases in which massage was employed in addition. Massage was thought to be a factor in the production of myositis ossificans in children and perhaps also in adults.

WALTER P. BLOUNT, M.D.

Cattaneo, F. Surgical Operation for Vicious Consolidation of Fractures (Interventi chirurgici in esiti di viziose consolidazioni di fratture) *Clin. chir.* 1930, vi, 131.

The author reports twenty-eight cases of operation for vicious consolidation of fractures. The cases are grouped according to the region in which the fracture occurred and the report of each group is preceded by a discussion of the clinical features and operative treatment of fractures in that region. Cattaneo emphasizes the danger of metal osteosynthesis. He uses it only when it is absolutely necessary and then employs only material that can be removed easily.

AUDREY G. MORGAN, M.D.

Harbaugh, R. W., and Haggard, R. E. Fractures of the Spine With and Without Operation—A Statistical Study. *California & West Med.*, 1930, xxxv, 3-5.

This report is based on fractures of the dorsal and lumbar vertebrae occurring in workmen ranging in age from twenty-six to sixty-five years. The majority were treated by leading orthopedic surgeons in California. The disability rating was made fifty and two tenths months after the injury in the cases operated upon and thirty and nine tenths months after the injury in cases not operated upon. The average disability in sixty-seven cases not operated upon was 45.4 per cent, and the average disability in twenty-two similar cases which were operated upon, 50.16 per cent.

The authors emphasize that each case presents individual problems which determine whether operative or conservative treatment is indicated.

ELLEN J. BECKHUISER, M.D.



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

McWhorter G. L. *Ligation of Both the Femoral Artery and Vein in Thrombo Angitis Obliterans A Report of Three Cases Surg Clin North Am 1910 5 33*

The reports of Makins and others that the frequency of gangrene is decreased when the companion vein is ligated with the artery to an extremity following injury, suggested to McWhorter that it might be advisable to ligate both the artery and the vein in thrombo angitis obliterans. Lewis and Keichert have suggested ligating the femoral artery below the profunda.

Allen states that one out of seven cases of thrombo angitis obliterans may be suitable for lumbar ganglionectomy. This operation causes a vasomotor vasodilatation. The amount of dilatation which can be obtained was determined by Brown by giving typhoid vaccine intravenously. The resulting vasodilatation was found similar to that caused by sympathectomy. Other methods of treatment include roentgen ray irradiation, reueryency, the application of heat, the administration of Ringer's solution by duodenal tube, the intravenous administration of salt solution, sodium citrate, and sodium iodide, the induction of hyperæmia and postural exercises.

The three cases treated by the author by ligation of the femoral artery and vein were all those of middle aged men. The chief complaints were pain, swelling, and local ulceration. Two of the patients were heavy smokers and had had one leg amputated. In all of the cases the ligation of the femoral artery and vein was followed by immediate improvement and relief of the pain. In one case healing was stimulated and the improvement has been maintained for two years. In the two other cases amputation was delayed. CLARENCE V. BATEMAN, M.D.

De Takáts G. *Ambulatory Ligation of the Saphenous Vein J Am Med Ass 1930 xiv, 1194*

De Takáts made a study of the indications for and the results of ligation of the saphenous vein combined with the injection treatment of varicose veins. He states that the clear indication for ligation of the saphenous vein is presented in the Trendelenburg test when after elevation of the limb and compression of the saphenous vein no filling of the varices occurs in the standing position but a sudden dilatation results when the pressure is released. When ligation is done under such conditions the ligation should be placed below the last competent valve in order to prevent the formation of new varices. Ligation before injection of the vein reduces the pressure in the valveless vein, protects the resulting

thrombus from recanalization, reduces the time required for treatment, and obliterates longer venous segments.

Ligation is done by the author in the office with the use of a local anæsthetic. It is associated with little discomfort. The injection of the vein may be begun one week after the ligation. The solution most commonly injected is 30 per cent sodium chloride and 50 per cent dextrose in quantities of 10 c cm.

Economic advantages as well as reduction in the danger of embolism are cited in favor of this treatment. In all cases in which the procedure was definitely indicated the patient was free from recurrence for more than a year.

CLARENCE V. BATEMAN, M.D.

## BLOOD, TRANSFUSION

Rasdin J. S., Riegel C. and Morrison, J. L. *Coagulation of Blood I. The Comparative Values of Calcium and Glucose as Agents for Decreasing the Clotting Time. Ann Surg, 1930, xci 801*

The authors report studies made on animals and in clinical cases regarding the value of calcium and glucose as agents for decreasing the clotting time of the blood, particularly in the presence of jaundice. They found that in various types of liver degeneration glucose given intravenously is more effective than any other substance used so far. In experiments on normal and jaundiced animals ionized calcium seldom had a favorable effect on the coagulation time whereas glucose given orally or intravenously lowered the coagulation time appreciably in the majority of instances. Glucose caused a reduction in the coagulation time also in patients with obstructive jaundice if the liver damage was not too great. In experiments on dogs it had no effect after hepatectomy, and it caused no increase in the blood fibrinogen whether jaundice as present or not.

In the discussion, Bancroft said that bleeders can be divided into two groups: those with definite hæmophilia and those with nutritional bleeding. On a high protein diet the latter become satisfactory operative risks. In dogs the administration of glycocholate will shorten the bleeding time. In a study of thrombosis and embolism in experiments on dogs Bancroft found that the injection of an emulsion of fat was followed by a marked increase in the clotting factors. In clinical cases he has noted that glucose given in the concentrations which are used for postoperative shock produces no change in the bleeding or clotting time.

FRANK B. BERRY, M.D.

Tiber, A. M. Observations on Blood Grouping and Blood Transfusion *Ann Surg*, 1930, xci, 481

The author uses the open macroscopic method of Vincent to determine the blood group of recipients and donors. He employs defibrinated instead of citrated blood because sodium citrate has a distinct inhibiting action on the agglutination of certain Group B cells. The sera used for testing are collected from the bloods that have already been examined in the laboratory.

Of 10,000 bloods examined, 45.6 per cent belonged to Group O, 36.4 per cent to Group A, 13.5 per cent to Group B, and 4.5 per cent to Group AB. The material used for testing these bloods consisted of pooled specimens of Group A and B sera. The grouping of the red cells was entirely satisfactory in 9,985 bloods. Fifteen bloods gave a questionable agglutination because they were either clotted or very anæmic. When the sera of a small number were tested with known red cells, it was found that in 6 cases the typing did not check with the results obtained by typing of the red cells. In 5 cases, in which the donor and recipient were of the same group, agglutination occurred when the bloods were cross matched.

In 1,467 blood transfusions there were only 2 deaths. One was due to an error in technique and the other to the use of a so called universal donor. In 10,242 transfusions collected from the literature there were 22 deaths, 13 of which were due to the use

of blood of the wrong type, 1 to the primary disease, 4 to heart failure, and 4 to an unknown cause. The death rate for blood transfusion is 0.39 per 1,000.

HOWARD A. MCKNIGHT, M.D.

#### RETICULO-ENDOTHELIAL SYSTEM

Smith, H. P. Studies on Vital Staining. III. The Simultaneous Ingestion of Two Dyestuffs by Phagocytes. The Question of "Blockade of the Reticulo-Endothelial System." *J. Exper. Med.*, 1930, li, 395.

When large amounts of brilliant vital red are injected into the blood stream of dogs, the dye is gradually removed from the circulation and most of it is taken up by numerous phagocytic cells scattered throughout various organs and tissues. The dye is found in these cells largely in the form of tiny red granules crowded in the cytoplasm.

When Niagara sky blue, a closely related dye stuff, is injected, it is taken up and stored in the same cells. The presence of red dye in the tissues does not prevent the cells from taking up the blue dye.

The normal ability of the phagocytes to take up Niagara sky blue is observed even when this dye is injected simultaneously with brilliant vital red.

These experiments therefore show that it is difficult, if not impossible, to "block" the cells with one dye so that their ability to take up another is even slightly impaired.

HOWARD A. MCKNIGHT, M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Haas S L Free Fascial Grafts—Their Union with Muscle *California & West Med* 1930 xviii 381

In experiments and in clinical cases in which a secondary operation was performed Haas found that muscle will unite with transplanted fascia. He states that the perimysium and endomysium of the muscle play the major role in forming the union with the fibrous tissue element of the fascia but that the transplanted fascia seems to engage actively in the process and there is some evidence that the muscle cells may undergo a fibrous transformation and share in the union. JOHN H CARLOCK MD

Palma R The Use of Fresh Strips of Aponeurosis as Suture Material (Sull impiego delle strisce di aponeurosi in lo stato fresco come materiale di sutura) *Ann Ital di chir* 1930 ix 325

In experiments on rabbits the author made a histological study of the changes occurring in fresh strips of aponeurosis used as suture material. The examinations were made at intervals ranging from a few days to six months after the operation. His findings show that the aponeurosis remains alive is not absorbed, does not become necrotic and does not act as a foreign body. ANTHONY R CAMERO MD

## ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Albee F H and Patterson M D The Bacteriophage in Surgery *Ann Surg* 1930 xcii 835

The authors discuss the possibility of bacteriophage action in infected wounds treated by the Orr dressing method (saucerization of an infected wound packing with vaseline gauze and allowing the dressing to remain in place for weeks).

They report three cases in which a native specific bacteriophage was present in the early course of the wound healing but was not demonstrated later.

They believe that the Orr dressing is most favorable for the development of bacteriophages, that the virulence of a variety of types of infecting organisms is reduced in the presence of their respective specific bacteriophage and that the bacteriophage is an additional factor promoting the healing of infected wounds. JOHN H WOOLSEY MD

Eley R C The Treatment of Erysipelas in Infants. A Report of Thirty Three Cases Treated with Antistreptococcus (Erysipelas) Serum *Am J Dis Child* 1930 xxviii 579

Eley calls attention to the extremely high death rate from erysipelas in infants, particularly those

under one year of age and the unsatisfactory results of various methods of treatment. He states that experiments made on animals and in clinical cases since 1925 have shown that specific antitoxin is of great value in the control of the infection. He noted no untoward effects in the cases of infants when he gave an initial dose of 10 ccm of a concentrated serum intramuscularly and repeated it daily until the lesions disappeared. In more severe cases no ill effects were noted when the same initial dose was given intravenously. Eley stresses the importance of the early administration of the serum treatment. Its most noteworthy effects in the cases reviewed were disappearance of the toxicity and improvement in the general condition, which often were apparent before any material change was observed in the lesions. CLARENCE V BATEMAN MD

## ANÆSTHESIA

Jones W H Percaine A New Regional and Spinal Anesthetic with Special Reference to High Thoracic Nerve Root Block and a New Technique *Proc Roy Soc Med Lond* 1930 xxiii 919

Percaine is a hydrochloride of a butyloxybenzoic acid diethyl ethylendiamide. It belongs to a group of chemical combinations which formerly were not known to possess analgesic properties. It forms colorless crystals which are odorless and tasteless. It masses at a temperature of 90 degrees C and melts at 97 degrees C. It is readily soluble in water and alcohol. Its solutions have a neutral reaction. It does not belong to the same group as cocaine or novocain being a derivative of quinine and therefore related to quinine.

Jones describes its preparation and administration in detail and discusses its effects. He states that it is the strongest drug of its kind ever produced and will never fail to cause analgesia or muscular relaxation if it is applied to nerve trunks or roots. Failure means faulty administration. SAMUEL KAHN MD

Bilgram E M Avertin Rectal Anesthesia Experience Abroad and at Home *Med J Australia* 1930 i 519

The author reports his experience with avertin in the clinic of Unger in Germany and in seventeen cases in which he used this anesthetic in Australia. He describes the proper preparation of the solution of avertin before it is administered.

Avertin is a crystalline white powder which is readily decomposed by light, air, and a temperature above 42 degrees C. It is used for rectal injection in a 3 per cent solution in distilled water prepared at a temperature of 40 degrees C. When decomposition takes place, hydrobromic acid and dibromacetal

dehyde are formed. Both of these substances produce intestinal injury in small doses. Their presence may be detected by the Congo red test. Two minims of 1:1,000 Congo red are mixed in 3.9 c cm. of the solution prepared for injection. The color must remain Congo red, blue indicates decomposition.

The author gave his patients  $\frac{1}{2}$  gr. of morphine hypodermically from three quarters of an hour to one hour before the rectal administration of 0.13 to 0.15 gm. of the anæsthetic per kilo of body weight. Supplemental anæsthesia was required in all but one of his seventeen cases. For this, a 1:5 mixture of chloroform and ether was used. No untoward circulatory or respiratory effects were noted in any of the cases although a fall in the blood pressure of 30 mm. resulted. Avertin anæsthesia is free from pain, vomiting, and discomfort, and when the proper dosage is used is perfectly safe.

MANUEL E. LICHTENSTEIN, M.D.

Bolliger, A., and Maddox, K. Experimental Anæsthesia with Tri-Brom-Ethyl Alcohol (Avertin) and Sodium Iso-Amyl Ethyl-Barbiturate (Sodium Amytal). *Med J Australia*, 1930, 1, 510.

In studies made on dogs the authors found that 0.47 gm. of avertin per kilo of body weight was necessary for anæsthesia lasting about an hour. During this time the carbon dioxide combining power of the blood was unchanged. Inorganic

phosphates decreased in concentration immediately after the establishment of the narcosis, but rose to a normal level in half an hour. The blood sugar showed a slight rise in the early stages, but returned to normal before the anæsthesia was over. One dog died from a carefully measured dose of 0.5 gm. The death occurred forty minutes after the induction of the anæsthesia. In this animal there was a progressive rise in the inorganic phosphates as well as in the sugar level. In dogs with experimental nephritis, avertin produced no decided change in the carbon dioxide combining power or glucose and phosphate levels. In a dog which was anæsthetized for over five hours by repeated doses of avertin no microscopic or macroscopic changes were noted in the kidneys or liver.

In another series of experiments on dogs sodium amytal was used in a dose of from 40 to 50 mgm. per kilo of body weight. A satisfactory non-toxic anæsthesia was produced. The blood sugar level showed a slight rise after the induction of the anæsthesia. The carbon dioxide combining power of the plasma remained constant throughout, while the blood phosphate sometimes showed a slight fall just after the narcosis began. In animals with experimental nephritis, the biological findings were practically normal as regards the carbon dioxide combining power, blood sugar, and cholesterol, but the blood phosphates showed a slight elevation.

MANUEL E. LICHTENSTEIN, M.D.

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Gwynne F J Malignant Disease Its Problems  
from the Standpoint of the Consulting Radiologist  
*Med J Australia 1930, 1 600*

The many extravagant claims made for deep irradiation therapy during the period of its introduction as a cure for cancer cannot be upheld. Statistical reviews of the end results reveal many disappointments. Experience has shown that in most cases of early malignant disease deep irradiation cannot replace surgery. However, it has a potent influence on cell, tissue, and body metabolism, and under as yet unknown conditions causes tumor regression. In advanced and recurrent lesions it is frequently the best treatment available.

The author endeavors to correlate the clinical impressions of cancer diagnosis and treatment with experimental results and speculative theories. In a discussion of the alterations of normal and neoplastic protoplasm subjected to irradiation the findings of research by physicists and cytologists into the nature of irradiation, the structure of living matter and the interactions of irradiation and tissue are reviewed. Only broad considerations of the problems involved based on the clinical aspects of the unselected material seen in a consulting radiological practice, are presented.

In malignant disease of the oesophagus subjected to irradiation the treatment yielded temporary benefit in the majority of cases, but failed to alter the ultimate downward course.

In malignant disease of the stomach, it had no effect on the course of the disease. When cachexia was pronounced it was apt to hasten death.

Malignant bowel growths were difficult to control with the present radiotherapeutic technique.

In primary or secondary malignant disease of the liver and in neoplastic processes involving the gall bladder irradiation was of no avail.

Inoperable mammary cancer subjected to irradiation was checked in its progress for variable periods in a number of instances but was not cured. With beneficial treatment, the tumor became more mobile, softer, and smaller. Affected glands became discrete. Pain was relieved, ulceration lost its induration, and discharge became serous and lessened in amount. Occasionally the cancer became operable. Irradiation applied to recurrences was at best palliative.

As regards prophylactic irradiation, the author believes that, with a carefully selected technique, postoperative irradiation has a place in cancer treatment, but its applicability is limited. The treatment of metastases with deep therapy is hopeless as regards cure, but in many cases there is a temporary regression of the lesions. When the

growth begins again after improvement, further irradiation therapy is frequently of little or no avail.

In the cases reviewed carcinoma of the cervix uteri offered a favorable field for irradiation, good results being obtained in some cases of inoperable and recurrent tumors as well as in cases of operable lesions. Epidermoid growths of the ulcerating and fungating types were more radiosensitive than the other varieties. To influence the local lesion and possible pelvic extensions of the disease a combination of radium and deep therapy is the method of choice. In nearly all cases the irradiation was of some benefit. In a few, the cancer was clinically cured during the period of observation. It was the rule for the primary growth and its pelvic extensions to be controlled at least temporarily. As in other organs repeated applications were not so beneficial as the first treatment.

In ovarian malignant disease the results were disappointing so far as cure was concerned but the treatment caused clinical improvement and apparently prolonged life. The results suggested that when only partial surgical removal is possible, it should be followed by full doses of irradiation.

In carcinoma of the prostate temporary palliation of symptoms was produced in a few instances.

Of skin lesions, primary and recurrent basal celled growths involving bone and cartilage were relieved for varying periods. However, no cures were established. Squamous celled growths of the skin which were inoperable or recurrent proved highly resistant to heavy doses of roentgen rays. Cervical gland metastases lost their vitality for a time occasionally receded, but renewed growth in spite of treatment was the invariable result.

Lesions of the nose and paranasal sinuses of the cancerous type tended to resist heavy and repeated irradiation. The rapidly growing sarcomatous growths receded more definitely. Swelling, pain, and discharge were relieved by deep therapy.

The majority of laryngeal lesions responded favorably to irradiation. Improvement resulted in both the tumor and the glands but the signs and symptoms returned after from three to nine months and further exposures were futile.

Patients with bronchogenic carcinoma derived no benefit from irradiation. In cases of secondary growths in the lungs palliation occasionally resulted.

In operable epitheliomata of the lip irradiation can compete successfully with surgery. When the lesion is inoperable irradiation is the treatment of choice. Prophylactic exposures are indicated as an adjunct to surgical measures.

The tongue lesions reviewed were of the hopeless primary and recurrent ulcerative epitheliomatous type and were not influenced by deep therapy.

Lymphosarcoma of the tonsil responded readily to deep therapy, but carcinomatous lesions were resistant to it.

Epithelioma of the floor of the mouth reacted variously. Some cases showed improvement, where as others exhibited no response.

Epithelioma in the hard and soft palates did not respond to deep therapy. Surface applications of radium produced improvement for variable periods. With a more vigorous use of radium, the treatment of intra oral new growths has been more successful.

In the author's experience, deep therapy has not been of much use in the treatment of glandular metastases. Lesions of the salivary glands, mainly mixed tumors of the parotid, showed a very favorable immediate response, but disappointing end-results. Lymphosarcomata of the lymph glands showed a spectacular regression after the first treatment, but recurred eventually and although the recurrences were influenced satisfactorily for a time by further exposures, they ultimately failed to react. In carcinoma of the thyroid gland, the response to deep therapy was unsatisfactory.

Osteogenic sarcoma occasionally reacted favorably to irradiation, but experience indicates that amputation is the preferable treatment for this condition. In cases of giant celled tumor, irradiation has often proved of decided value and should be tried before surgery is attempted. Ewing's tumor showed a definite early response to deep therapy. Fibrosarcomata vary in radiosensitivity. As a group they are radioresistant and are better treated by amputation. Deep therapy of metastatic bone lesions did not alter the course of the disease in any case, but usually relieved the pain.

Isolated instances of other malignant conditions of a primarily inoperable nature or recurrences treated by deep therapy are cited. Most of these showed no improvement from the treatment.

The methods of applying therapeutic irradiation vary widely, but it is generally agreed that the total dose delivered to the tumor must be from 100 to 150 per cent of the erythema skin dose without overdosage of the healthy tissues. This may be delivered in a single application, but the majority of irradiation treatments are now given in smaller doses at intervals. Some radiologists are convinced that better results may be obtained by the so called saturation method, i.e., maintenance of a full dose for a period of about two weeks by giving additional doses to make up the loss in effect during any given period.

The radiosensitivity of normal and neoplastic tissues is subject to wide variations, and the effects of irradiation depend largely upon the technique of application of the rays. The author describes in considerable detail the changes noted after irradiation with varying dosages in the skin and its appendages, salivary glands, ovaries and testes, spleen, liver, nervous system, osseous system, blood and lymph vessels, lymphatic system, thymus, lungs and pleura, heart, blood, and enzyme activity.

The variation of tumor radiosensitivity depends in part upon the following factors: (1) cell morphology and tumor vascularity, (2) the phase of the life cycle of the cell, (3) the chemical composition of the cell, (4) the general health of the host, and (5) the local conditions in and around tumor. All of these factors are discussed at length. The readiness with which a tumor is influenced by irradiation is no criterion of its curability by this form of treatment. When a favorable response is obtained, the further growth of the tumor is checked and the malignant cells degenerate and are replaced by a healthy cicatrix. A detailed account of the minute changes which have been observed in human carcinomata is given. Many of the effects observed in practical irradiation therapy are caused by the change in the blood supply resulting from the endarteritis obliterans produced by the irradiation. When the progress of the growth becomes reestablished, it is the rule, with very few exceptions, for even heroic doses of irradiation to be unsuccessful in securing further benefit. The author's experience does not include an instance in which stimulation of the growth followed as a result of the irradiation.

Irradiation intoxication is discussed as regards its manifestations and the various hypotheses advanced as to its cause. Gwynne finds none of the theories wholly satisfactory as they all fail to cover all of the conditions and circumstances of the disorder.

The physics of radiant energy is given consideration in relation to the biological action. Most of our knowledge pertaining thereto is rather speculative. Only the absorbed irradiation produces biological effects, and while the approximate amounts of rays reaching different parts of the tissues irradiated may be estimated, accurate measurements in terms of biological effects are not available at present. Dosage deals with the quality and quantity of irradiation used. These factors may be determined by various methods. Some of the methods are described in detail. However, there is no satisfactory, practical, direct way of measuring irradiation energy. The methods in use require a transformation of the primary energy and register the magnitude of some secondary effect. The author points out some of the errors inherent in the different measuring devices and methods commonly employed. In the present state of our knowledge an ideal statement of X ray dosage includes the number of R units, the shape, size, number, and order of the ports of entry, the quality of the irradiation, and the time of exposure. It is more correct to specify the depth dose in similar terms than as a percentage of the surface dose.

A considerable portion of the article is devoted to general considerations of the cancer cell, cancer genesis, the phenomena of its development, and cancer immunity. Generally accepted clinical and experimental data are critically reviewed. The various theories advanced to explain how therapeutic irradiation produces tumor regression are cited, and the opinion is expressed that some of its results are secured by helping the body to increase

the defense powers that it sets in motion itself against the neoplastic onslaught

In conclusion the author cites *diverse* facts gathered from clinical and experimental sources, some of them of a *conflicting* nature which tend to show that our knowledge of irradiation therapy as applied to malignant disease is far from being on a scientific basis. Clinically irradiation may cause tumor regression and therefore is a potential control for cancer growth. It has value as an adjuvant to other methods of treatment and sometimes is the method of choice. Certain biological problems require solution if the application of irradiation therapy is to be increased. The laboratory will be of help in determining

1 Whether there is a wave length or combination of wave lengths capable of selecting some resonator in, and peculiar to cancer cells and so affecting them in some phase of their life cycle that further growth is rendered impossible

2 The most sensitive period or periods in cell life in which irradiation should be repeated with the object of producing tumor regression

3 The value of adjuvants directed toward increasing the radiosensitivity of tumors

4 Facts related to the colloidal chemistry of cancer cells which might reveal the mechanism of adsorption governing the selection by the cell of poisons which will destroy its growth

ADOLPH HARTING M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Bullock, F. D. and Curtis, M. R. Spontaneous Tumors of the Rat. *J. Cancer Research*, 1930  
xv, 1

A rat colony established ten years ago primarily to determine whether sarcoma of the liver could be produced experimentally in rats through the agency of *cysticercus fasciolaris* the larvae of *tania crassicolis*, has yielded more than 2,400 rats with one or more cysticercus tumors of the liver and 489 rats with 521 neoplasms of independent origin. Of the 521 primary spontaneous tumors, 309 were malignant.

Sarcoma was by far the most common form of malignant growth. Excluding the thymic neoplasms it accounted for 227 of the tumors, of which 75 were subcutaneous or superficial, and 152 were deep. The superficial sarcomata showed a wide anatomical distribution, the parts of the body in which they occurred including the ear, leg, and tail. They were of several different histological types, but the mixed small cell cystic sarcomata predominated. Of the deep sarcomata, 94 were polymorphous or round cell lymphosarcomata. Seventy eight of these arose in the mesenteric lymph nodes, and many of them were associated with ulcerative lesions of the cæcum.

The malignant epithelial tumors comprised 63 carcinomata, 35 of which were of the squamous cell type. The latter involved the skin in 24 rats, the uterus in 10 rats and the lung in 1 rat.

In most of the benign fibro epithelial tumors of the breast there was a tendency toward fibrous tissue over growth at the expense of the parenchyma, resulting in tumors containing a preponderance of stroma.

The thymus gland showed a tumor incidence almost as high as that of the breast. It gave rise to 74 tumors, 68 of which were benign growths probably related genetically to the infectious granulomata. These benign thymus tumors were confined to a single strain of rats and occurred in organs which were in the late stage of involution.

The other benign tumors were 26 fibromata, 6 lipomata or fibrolipomata, 4 uterine myomata, 3 papillomata, 2 odontomata, 1 osteoma, 1 ganglioma of the optic nerve, 1 lymphangioma, 1 hepatoma, 1 testicular tumor (seminoma?), and 1 papillary cyst.

A specific difference between rat and human neoplasms was the comparatively frequent occurrence of a malignant degeneration of the fibrous tissue elements in the benign fibrous and fibro epithelial and the malignant epithelial tumors in the rat. This sarcomatous transformation was observed

in 13 carcinomata, 15 fibromata, and 3 adenofibromata.

In addition to the malignant tumors enumerated there were 13 mixed tumors or carcinomata and 6 malignant tumors of the thymus gland. The latter included 3 neoplasms which were regarded as carcinomata and 3 which showed the structure of lymphosarcomata.

Among the rarer malignant tumors there were a chondrosarcoma of the sternum, an osteochondrosarcoma of the lung, an intrathoracic osteochondrosarcoma of the chest wall, a fibrosarcoma of the lungs and heart, a carcinoma of the thyroid gland, a gelatinous carcinoma of the cæcum, an adenocarcinoma of the stomach and liver, 2 myosarcomata of the uterus, 2 osteogenic sarcomata of the leg, 2 sarcomata of the orbit, 2 basal cell epitheliomata of the skin, 2 preputial gland cancers, 2 adenocarcinoma, and 2 carcinosarcomata of the breast, and 3 cystadenocarcinomata of the ovary. The kidneys gave rise to 7 carcinomata and 1 sarcoma. Six of these carcinomata were embryonal in type.

The superficial malignant tumors rarely metastasized but the deeper neoplasms not infrequently formed secondary growths in distant tissues.

The prevailing type of benign tumor presented a glandular structure with varying quantities of fibrous or occasionally fatty stroma. Of the 212 benign neoplasms, 97 were adenomatous, and of these 87 were of mammary gland origin, a marked contrast to the low incidence of breast cancer. There were 3 additional adenofibromata of the breast showing sarcomatous changes in the stroma which were included among the sarcomata.

Rats with a tumor in one part of the body not infrequently showed one or more primary tumors in other regions. In 35 rats the spontaneous tumors were associated with cysticercus sarcomata of the liver. Twenty eight rats without cysticercus tumors bore multiple spontaneous neoplasms.

SAMUEL KAHN, M. D.

Harding, H. E., and Passey, R. D. A Transplantable Melanoma of the Mouse. *J. Path. & Bacteriol.*, 1930, xxviii, 417.

The authors describe a small sessile lobulated black tumor about the size of a grain of wheat which developed at the tip of the left ear of a normal mouse which had come from healthy stock and had not been subjected to experiment. After incomplete removal, the tumor promptly recurred, showed in vasive characteristics, and subsequently caused the death of the animal.

In a series of experiments carried out with this tumor, it behaved exactly as any other transplant-



able mouse tumor. It grew progressively when it was grafted into other mice, it recurred after incomplete removal, it was invasive, and it gave rise to metastases. A large proportion of the cells in the tumor were extraneous phagocytic cells full of melanin.

JOHN H. GARLOCK, M.D.

**Dunn J. S.** Invasion of Epidermis by Carcinoma  
*J. Path. & Bacteriol.* 1930, xxiii, 297

The author reports the case of a woman seventy-three years of age who had had a small ulcerating and bleeding lump at the anus for two years. Examination showed an ulcerated malignant nodule on the anterior anal margin. This was excised with the anal canal and the external sphincter.

Sections showed the tumor mass to be a mucinous carcinoma. In addition they showed that malignant cells from the mucinous carcinoma had gained access to the layer of squamous epithelium and had propagated and extended in that layer by their own powers of growth and movement for a distance of more than a centimeter. The author calls attention to the practical importance of this finding with regard to the necessity of removing the skin surrounding the anus in the performance of the radical operation.

JOHN H. GARLOCK, M.D.

#### GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

**Vesell H. and Barsky, J.** Chronic Meningococcus Septicæmia  
*Am. J. M. Sc.* 1930, clxix, 589

Chronic meningococcus septicæmia was first described by Solomon in 1902. Since then numerous cases have been reported. The authors report a case of their own with the clinical findings observed throughout the course of the disease.

The early diagnosis is made with difficulty. The early symptoms are not particularly acute although the onset is usually sudden with fever and rigors. Arthritic involvement of the knees or elbows is common and there may be a history of recent tonsil infection. Severe headache is often present. An erythematous or at times a nodular rash appears during the first week on the extremities, trunk, or face. Signs of meningitis are usually absent in the early stages.

Meningococci are not usually cultured from the body fluids until the third week. Cultures taken from the blood, spinal fluid, or sinuses are most positive. Blood changes are usually not extreme. As a rule only a moderate leucocytosis is found.

The spleen is moderately enlarged. Endocardial changes are more common than myocardial or pericardial changes. Meningococcus pneumonia is occasionally encountered. If meningitis occurs it develops usually late in the course of the disease. The course of the septicæmia runs from eighty-five to one hundred and thirty days. The prognosis is not always poor. Sergeant reports cures in 90 per cent of his cases. In other series of cases the mortality has ranged from 10 to 50 per cent. An un-

favorable prognosis is indicated by a marked eruption, high fever, profuse diarrhoea, tachycardia, and positive blood cultures with many colonies per cubic centimeter.

The treatment generally consists in the use of specific serums. Favorable results have been obtained also from fixation abscesses and vaccine treatment.

CLARENCE V. BATEMAN, M.D.

**Colebrook, L., Cope, Z., Bosworth, T. J., Riches E. W. and Others.** Discussion on Actinomycosis Common to Man and Animals  
*Proc. Roy. Soc. Med., Lond.*, 1930, xxiii, 861

COPE states that the common form of actinomycosis in man is caused by, or at least associated with, a gram positive anaerobic hyphomycete which at some stage of its growth in the tissues forms small granules that are to be seen in any soft focus and are composed of a feltwork of fungus usually surrounded by a radiating series of gram negative club-like processes.

The findings of Lord and Wright indicate that the fungus is a commensal, if not usual, inhabitant of the mouth and carious teeth. Therefore, slight abrasions of the cheek and gums may enable it to enter the tissues, and when it is swallowed portions of it may lodge in the cæcum and appendix. Minute aspirated fragments may account for the pulmonary lesions. In some cases it may creep through small lesions of the lower œsophagus and infect the mediastinal tissues. However, the problem of how it gains access to the mouth and teeth still remains unsolved. The current view that the infection comes from cereals and grasses has not been proved.

Actinomycosis is very rare under the fifth year of age. It is possible that there may be a relation between its earliest incidence and the onset of dental caries.

The actinomycotic process advances almost always by contiguity of tissue, but occasionally, as in infection of the liver from the appendix through the portal veins, it progresses by way of the blood stream. The lymph glands have a curious immunity to it. Cope has never seen a lymphatic gland infected by actinomycosis and knows of no authentic record of such infection. In the immunity of the lymph glands, actinomycosis is in sharp contrast to actinobacillus infection of cattle and to almost every other variety of infection, acute and chronic. On the other hand, it causes a remarkable reaction in the connective tissues. Unna characterizes the connective tissue reaction as a unique example of tissue reaction at a distance for the changes may take place at a considerable distance from the place where the fungus is situated and it is possible to cut many sections of the curiously hard, glistening fibrous tissue without finding any filaments of the parasite. The connective tissue reaction differs considerably from that found in tuberculosis and syphilis not only in the relative proportion of the various kinds of cells found but also in the fact that the blood vessels are not obliterated. The manner in which the fungus

causes this reaction is unknown. It is probably a beneficial reaction for in the parts where connective tissue is comparatively scanty in proportion to the epithelial elements, as in the lungs and liver, the prognosis is much more grave.

In actinomycosis affecting the face and neck the picture is usually that of an infiltrating inflammatory mass in the parotid region, around the lower or upper jaw, or in the submaxillary or lower cervical regions. Occasionally the condition spreads to the deeper tissues, enters the skull, and erodes the vertebrae. Trismus is common, but pain is usually slight. The lower jaw may be eroded externally or may be involved primarily. In every case, softening of the inflammatory mass ultimately occurs and granules can then be obtained from the pus. Softening is sometimes delayed for several months, during which time the diagnosis is difficult.

In the right iliac fossa the infection almost always spreads from a diseased appendix. As a rule it follows the removal of a perforated appendix, but occasionally it develops when no operation has been performed. Its presence may be manifested by a persistent sinus with indurated borders or a large, hard, and rather fixed mass. It does not readily invade the peritoneum, but spreads retroperitoneally. Secondary involvement of the liver may occur by portal metastasis, but the symptoms of this affection may not show for many months or even for a year or two after the attack of appendicitis.

Thoracic actinomycosis may take the form of chronic bronchitis, but more commonly the inflammatory infiltration appears to spread from the mediastinal tissues to the pleura and lung and generally comes to the surface in the form of a subcutaneous abscess from which the granules can be obtained. The base of the lung is more commonly affected than the apex, and the initial surface abscess is usually at about the level of the diaphragmatic attachment to the ribs.

The brain, kidney, and other viscera are sometimes the site of actinomycosis. It is probable that they become infected by way of the blood stream. The ovary may be infected by contiguity across the peritoneal cavity.

The diagnosis of actinomycosis is made with certainty only by the finding of the granules of the fungus in the pus or in sections of the tissue. The granules are found only when the inflammatory tissue has softened. Accordingly, there is often a time—occasionally a long time—when the diagnosis can be made only provisionally, on clinical grounds. However, it is often possible to diagnose the condition with a reasonable degree of certainty long before the fungus can be found. The condition must be differentiated from chronic sepsis, tubercle, syphilis, and new growth. Tubercle tends to soften and ulcerate earlier than actinomycosis. Syphilis will give a positive Wassermann reaction. Sepsis is more acute, may cause sequestra of bone, and soon produces an abscess. To rule out new growth, examination of a section of the tissue may be necessary.

The only safe rule is to consider the possibility of actinomycosis in the diagnosis of every chronic inflammatory or supposed neoplastic swelling, particularly swellings in the face, jaws, and right iliac region. In the chest, the disease is unlikely to be diagnosed before the fungus is found in the sputum or in the pus from abscesses as the early stages of thoracic actinomycosis are insidious.

The prognosis of actinomycosis varies greatly according to the part of the body affected. It is most favorable when the infection occurs in the cervico-facial region as the majority of the lesions of the neck and face become healed in the course of time. It is rather unusual in such lesions for the fungus to metastasize to a vital part or track upward to the skull or downward to the mediastinum.

Less favorable is the outlook in ileocaecal actinomycosis, but even in this condition recovery occurs in about 50 per cent of the cases. If the fungus gains access to the liver by way of the portal radicles the prognosis is almost hopeless.

To date, no certain specific for actinomycosis comparable to salvarsan in the treatment of syphilis has been discovered. Most cases are treated by a combination of methods which make it difficult to appraise the merits of each method individually. Potassium iodide is the drug most frequently used and may be given in doses up to as much as 100 gr a day. Intramuscular and intravenous injections of colloidal copper are apparently beneficial. The results of salvarsan have been doubtful.

Clinical evidence supports the view that the X-rays have a softening influence on the hard mass of inflammatory tissue so often found in the disease. Radium irradiation is less certain and less easy to apply evenly throughout the lesion.

Surgery has definite indications for the opening of abscesses, the removal of sequestra, and the excision of some of the dense mass of connective tissue which sometimes remains for months as an indolent tumor showing little tendency to soften.

Bosworth states that in certain species of animals actinomycosis is a condition of considerable economic importance. He calls attention to the fact that the term "actinomycosis" is ordinarily used in a wide sense to include a number of distinct pathological entities which resemble one another in their clinical aspects and can be distinguished with certainty only by microscopic and cultural examinations. At least 3 distinct types of infection in animals which are characterized by the presence of club-bearing granules have been called "actinomycosis." As suggested by Wright, the term should be restricted to a suppurative process combined with granulation tissue formation, the pus of which contains granules composed of dense aggregates of branched filamentous micro organisms and their transformation or degeneration products.

In cattle, the common form of actinomycosis begins as an infection of the jawbone. The available evidence strongly suggests that primary actinomycosis in other situations is extremely rare.

able mouse tumor. It grew progressively when it was grafted into other mice, it recurred after incomplete removal. It was invasive and it gave rise to metastases. A large proportion of the cells in the tumor were extraneous phagocytic cells full of melanin.

JOHN H. GARLOCK, M.D.

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The spleen is moderately enlarged. Endocardial changes are more common than myocardial or pericardial changes. Meningococcus pneumoniae is occasionally encountered. If meningitis occurs it develops usually late in the course of the disease. The course of the septicæmia runs from eight to five to one hundred and thirty days. The prognosis is not always poor. Sergent reports cures in 90 per cent of his cases. In other series of cases the mortality has ranged from 10 to 50 per cent. An un-

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The treatment generally consists of specific serums. Favorable results are obtained also from fixation antibody treatment.

CLARE L. V. 1

Colebrook, L., Cope, Z. Botnarri F. W. and Others. Discussion on mycosis Common to Man.  
*Proc. Roy. Soc. Med. Lond.* 1914

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The findings of Lord and Wright in the fungus is a common if not usual in the mouth and various teeth. Therefore lesions of the cheek and gums may enter the tissues and when it is swallowed it may lodge in the cæcum and appendix. Aspirated fragments may account for the lesions. In some cases it may creep through the lesions of the lower esophagus and into the distal tissues. However, the problem gains access to the mouth and teeth is unsolved. The current view that the fungus comes from cereals and grasses has not been.

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reaction. The test was positive in nearly all cases of cysts with recent rupture or suppuration, but in only one third of those with uncomplicated or degenerated cysts. In adults, positive results were more frequent when the cysts were pulmonary. Of the cases of recurrent or residual cysts a positive result was obtained in only 52.8 per cent.

The number of minimum hæmolytic doses of complement fixed by the serum of the patient should be taken at the end of the second week after operation and repeated five and ten months later as the comparison gives valuable evidence regarding the possible presence of residual or recurrent cysts. A patient whose serum fixes 6 minimum hæmolytic doses of complement later than nine months after operation is probably harboring active cysts.

Before operation, the fixation of  $4\frac{1}{2}$  minimum hæmolytic doses by the patient's serum is diagnostic of hydatid infestation. The fixation of 3 minimum

hæmolytic doses is also specific if confirmed by a second test.

The usual cause of failure to react is insufficient absorption of antigen from the cyst.

Failure of the serum to fix 3 minimum hæmolytic doses of complement in the presence of hydatid antigen does not exclude the presence of echinococcal infestation, either before the first operation or when residual or recurrent cysts are suspected. This reaction is valuable in excluding recent rupture or suppuration since in such cases the reaction is almost invariably positive. The exceptions are found in cases in which the cyst fluid has no antigenic properties and those in which suppuration has occurred in a degenerated cyst.

The test is believed to be specific, although no comparison has been made with sera from patients with other helminthic infestations.

C. S. PLATT, M.D.

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# INTERNATIONAL ABSTRACT OF SURGERY

NOVEMBER, 1930

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Barret, M. Tuberculosis of the Skull (Tuberculose du crâne) *Bull et mém Soc nat de chir*, 1930, lvi, 403

The case reported was that of a man twenty six years old who suffered from headache in the frontal portion and the right side of the head and discovered an enlargement in this region. He gave a history also of eye fatigue. Examination revealed a frontoparietal tumor the size of a walnut on the right side. There was no disturbance of sensation or motility and no fever. The reflexes were normal. Pus withdrawn was aseptic. Incision disclosed an abscess containing from 15 to 20 c cm. of pus. When the frontal bone was denuded further down, a perforation the size of a 10 cent piece was found. Trephination disclosed a fungous extradural abscess larger than the first one discovered. A cotton drain was left in contact with the dura mater. The pus did not contain the Koch bacillus. Recovery was rapid.

Other tentative diagnoses being disproved, the author believes, in spite of the lack of confirmatory evidence from the laboratory, that this was a case of primary tuberculosis (perforating form of Wolkmann).

In the discussion of Barret's case, SORREL reported that he had treated twelve cases of cranial tuberculosis in children but only one case in an adult. In children, multiple foci are the rule, whereas in the adult there is usually only a single focus.

LENORMANT discussed two types of tuberculosis of the cranium—the localized perforating type, such as was present in Barret's case, and the infiltrating type, a true tuberculous osteomyelitis which is progressive in spite of repeated interventions.

AUVRAY reported a case of the infiltrating type and emphasized the difficulty in the diagnosis in certain instances. In the case he reported the condition was diagnosed as ordinary osteomyelitis, osteomyelitis due to the typhoid bacillus, and tuberculosis of the cranium. FLORENCE A. CARPENTER

### EYE

Smith, E. T. Orbital Cellulitis in Children. *Med J Australia*, 1930, 1, 707

The author defines orbital cellulitis as a serious purulent infection behind the orbital septum resulting from the backward extension of infection from the eyelids, the outward extension of infection from the nasal sinuses, or a blood stream infection of a type usually producing periostitis or osteomyelitis. The form due to blood stream infection is the most dangerous.

Smith reports three cases. In the first and second cases, in which he delayed incision, the condition became more extensive, increasing induration interfered with the nourishment of the cornea, and the cornea sloughed. In the third case Smith opened the focus at once and put in a drain. Although no pus escaped at the time of the operation, pus was found on the drain the next day. In this case the eye was saved. THOMAS D. ALLEN, M.D.

Begle, H. L. Perforating Injuries of the Eye by Small Steel Fragments. *J Michigan State M Soc*, 1930, xxix, 345

Begle states that in general the damage done to the eye by a foreign body is directly proportional to the size of the foreign body. Large foreign bodies shatter the eyeball by violence. Moderate sized foreign bodies cause irregular corneal wounds, prolapse of the iris and incarceration of the iris in the wound, bleeding into the anterior chamber or vitreous from tears of the iris and ciliary body, and extrusion of the lens matter into the anterior chamber if the lens capsule is injured.

The most frequent cause of perforating injuries by small steel fragments is the striking of a piece of hardened steel with a hammer.

Injuries by small foreign bodies cause smooth corneal wounds which may escape notice. The anterior chamber is not lost, but the iris may exhibit a punched out hole or notch at the pupillary

margin. In lens injuries the lesion shows a tendency to close promptly with a partial lenticular opacity. The vitreous is clear, and the foreign body may be seen in the posterior part of the globe.

Begle concludes that small foreign bodies perforating the cornea near the limbus pass through the zonular region and leave the lens uninjured. That if a fragment of steel lies in the lens and there is useful vision, early removal of the fragment should be attempted as otherwise complete opacification will result from siderosis. Fragments of steel in the eye undergo complete rusting only when they are smaller than 5 mgm. **LESLIE L. MCCOY, M.D.**

**Friedenwald J. S.** The Pathogenesis of Acute Glaucoma. I. Clinical and Pathological Study. *Arch. Ophthalmol.* 1930 III 560.

The author has found that acute glaucoma is always associated with edema of the ciliary body and hemorrhagic serous and fibrinous extravasations in the ciliary processes. As none of the larger vessels is diseased, he concludes that the edema must arise from changes in the capillaries.

**VIRGIL WESCOTT, M.D.**

**Friedenwald J. S. and Pierce H. F.** The Pathogenesis of Acute Glaucoma. II. Experimental Study. *Arch. Ophthalmol.* 1930 III 574.

A lesion of the capillaries of the ciliary body being found in cases of acute glaucoma, the authors injected histamine into the eyes of animals because of its action on the capillary walls and the increased permeability of the endothelium. Marked edema of the ciliary body with extravasation of serum and fibrin followed. The root of the iris was pushed forward but the angle was not blocked. Coagulated serum was found in the anterior and posterior chambers. The sequelae included also a slight bullous keratitis, edema of the conjunctiva, a rise in tension, mydriasis and shallowing of the anterior chamber.

**VIRGIL WESCOTT, M.D.**

**Coutela.** Operations Substituted for Enucleation.

Particularly Amputation of the Anterior Segment of the Eyeball. (Des opérations substituant à l'enucléation et en particulier de l'amputation du segment antérieur du globe oculaire). *Bull. Soc. d'ophtalmologie de Paris* 1930 XXII 332.

In amputation of the anterior segment of the eyeball only the anterior third is removed. It is preserved to preserve the mobility of a normal eyeball, to give support for the artificial piece to be placed on the surface of the stump, the resection must be in front of the scleral insertion of the four recti muscles. The incision passing behind the iris permits complete extraction and prevents pain and serious accidents which may result from irritation or incarceration of the ciliary stump.

The classical technique is described. The author does not include the choroirectomy, believing that pinching of the choroirectomy

lips of the wound results in irritation and infection, a possible source of serious sympathetic ophthalmia. A supporting needle held in place during the operation is indispensable as it facilitates delimitation and resection of the corneoscleral border and when the latter is removed it holds in place what is left of the globe and prevents its collapse, which would be accompanied by abundant loss of the vitreous humor.

**BOURGUET** commenting on the work of Coutela reviewed the classical technique and emphasized Coutela's departures from it in the matter of placing the curved supporting needle and making the suture. The latter is done with a suture bearing a needle on each end. Instead of passing the suture from without inward in the upper lip and from within outward in the lower lip, Coutela passes it from within outward in both lips. The choroid is excluded from the suture. The conjunctiva is sutured anteriorly as in the classical procedure. In the twenty year experience Coutela has used this procedure he has not served the slightest complication.

**Redslob E.** The Relations Between the Chemical Properties of the Vitreous and the Intra Ocular Tonus. (Les relations physico-chimiques du tonus intra-oculaire). *Bruzelles méd.*

With the ultramicroscope the framework of the vitreous body of the eye may be seen to consist of a reticulum formed by bands of clear para-lysin arranged perpendicularly to the luminous rays. Tyndall and crossed by similar oblique bands. The framework is inviolable and rigid.

It is filled with a liquid. The viscosity is high.

measure. In many of the cases there was a marked contraction for form and color, usually concentric, and often symmetrical. In about 1,000 cases a definite endocrinopathy was present. Of the endocrines, the pituitary seems to exercise a primary influence in field changes. Next, in decreasing order of importance, are the effects of the thyroid, gonads, and other endocrines. The authors emphasize that to determine the cause of field alterations a thorough investigation is necessary.

GEORGE R. McAULIFF, M D

**Bedell, A. J.** Traumatic Rupture of the Choroid with Detachment of the Retina. Spontaneous Re-Attachment. *Am J Ophth*, 1930, xiii, 390

The author reports the case of a patient who was struck in the left eye by a fist, the blow causing a large vitreous hemorrhage and rupture of the choroid. Shortly thereafter detachment of the lower one fifth of the retina was observed. After about a month and a half the hemorrhages had become absorbed and the retina had returned to its normal position. Vision was then 20/15.

GEORGE R. McAULIFF, M D

## EAR

**Crowe, S. J.** Pathological Changes in Meningitis of the Internal Ear. *Arch Otolaryngol*, 1930, xi, 537

Crowe reports the results of an investigation begun five years ago for the purpose of studying deafness by the correlation of gross and microscopic changes in the middle and inner ear with auditory and vestibular tests for function. More than 1,000 pairs of temporal bones have been sectioned and examined microscopically. The article includes photomicrographs of the lesions of the middle and inner ear in various types of meningitis which show (1) the extension of otitis media to the labyrinth and meninges by way of the round window, stapedio-vestibular articulation, and fissure antefenestrum, and (2) the extension of primary meningitis to the labyrinth by way of the perineural spaces of the auditory nerve, the perivascular spaces of the modular vessels, and cochlear aqueduct.

The author finds it difficult to draw any conclusion of clinical importance from his work, but believes it gives a clearer understanding of the anatomy of the ear, the physiology of the labyrinthine fluids, and the more common pathological lesions of the internal ear.

GEORGE R. McAULIFF, M D

**Bourguet, J.** The Surgical Treatment of Labyrinthine Vertigo by Evidence of the Semicircular Canals. (Traitement chirurgical des vertiges labyrinthiques par l'évidement des canaux demi-circulaires). *Bull et mém Soc d chirurgiens de Par*, 1930, xxii, 175

This article deals only with labyrinthine vertigos which are the sequelæ of chronic suppurating otitis

Moderately severe infection gives rise to a sort of coagulation of the endolymphatic fluid called "serous labyrinthitis." In this condition the patient has attacks of vertigo several times a day, which incapacitate him for work. When the infection is severe, the attacks are more violent, but they do not last so long as the nerve cells are soon killed, the vertigo then ceasing.

Bourget reports the case of a woman who had had chronic suppurative otitis on the left side for thirty four years. Three months before she was seen by him she had been subjected to a petromastoidectomy for severe vertigo with nausea and vomiting. The vertigo was not cured. Examination by Bourget disclosed horizontal nystagmus and complete deafness on the left side. The site of the operation was completely covered with epidermis. Bourget performed a labyrinthectomy, the technique of which he describes in detail. Not only the semicircular canals and the vestibule, but also any supralabyrinthine, retrolabyrinthine, and infra labyrinthine petrous cells which were present were removed.

In some cases Bourget performs only a labyrinthotomy, i.e., an abrasion of the vestibule and the membranous ampullæ. This is done by way of the auditory canal after a radical operation by the same route and hence without a retro auricular incision.

PAGE

**Roberts, E. R.** Simple Mastoid Wound Postoperative Management, with a Detailed Analysis of Sixty-Seven Cases. *Arch Otolaryngol*, 1930, xi, 583

The author reviewed 828 cases of acute suppurative otitis media, in 63 of which a simple mastoidectomy was done. In the postoperative treatment after mastoidectomy Roberts seeks a good cosmetic result, a sound scar, and the quickest possible convalescence. He emphasizes that for satisfactory healing a thorough and complete operation is essential. In the management of the wound, constant aeration and drainage shorten the drainage period and tend to give an excellent cosmetic result. Antiseptic solutions are without demonstrable influence.

GEORGE R. McAULIFF, M D

## NECK

**Lian, Skarika, and Thoyer.** Arterial Pressure and the Oscillometric Index in Basedow Syndromes. (La pression artérielle et l'indice oscillométrique dans les syndromes basedowiens). *Bull et mém Soc méd d hop de Par*, 1930, xlii, 497

This report is based on 133 cases of exophthalmic goiter. In the majority there was a slight arterial hypertension. The systolic pressure was increased in 75 (56 per cent), normal in 50 (37 per cent), and below normal in 7 (5 per cent). It was recorded as above normal when it exceeded 140 mm Hg. The increase was always slight. When the systolic pressure reached 200 mm Hg, some associated disturb



ance was suspected. In 21 cases the systolic pressure was between 145 and 150 mm Hg and in 21 others between 155 and 160 mm Hg. If 150 mm Hg had been taken as the normal there would have been 54 cases with an increased systolic pressure as compared with 71 with a normal pressure.

A divergent sphygmomanometer formula (increase of the differential pressure) was found in 80 of the 133 cases. The most common modality was represented by elevation of the systolic pressure above the high normal (140 mm Hg) by from 10 to 20 mm Hg with a normal diastolic pressure. The diastolic pressure was below normal in only 22 cases.

The slight hypertension with a divergent sphygmomanometer formula is due to hyperactivity of the sympathetic nervous system which is the rule in exophthalmic goiter.

The oscillometric index is increased in the majority of cases of Basedow's disease, but is a little less than in non Basedow hypersympatheticotonia. The authors found it above normal in 58 per cent of the cases reviewed, normal in 28 per cent, and below normal in 14 per cent.

In the discussion MAY agreed that the change in the arterial pressure frequently noted in Basedow's disease is due to excitation of the sympathetic. He characterized it as a spasmodic hypertension resulting from vasoconstriction and called attention to the fact that peripheral vasoconstriction and vaso-

dilatation can be determined better from the relation of the oscillometric index to the differential pressure than from the oscillometric index.

FLORENCE A. CARPENTER

Thompson, W. O., Thompson, P. K., Bralley, A. G., and Cohen, A. C. Prolonged Treatment of Exophthalmic Goiter by Iodine Alone. *Arch Int Med*, 1930, 41v 481.

From a study of twenty four cases of exophthalmic goiter subjected to prolonged treatment with iodine alone the authors conclude that cases of moderately severe and severe exophthalmic goiter rarely show more than temporary improvement during such treatment, and frequently become more severe. In mild cases, on the other hand, the condition often responds satisfactorily and sometimes terminates. In mild cases the incidence of unsatisfactory results appears to be so small that it is not a contra indication to prolonged treatment with iodine provided the patient remains under close observation.

The response appears to be determined more by what is happening to the disease spontaneously than by the iodine. In cases showing satisfactory results iodine may merely have held the disease in check while it was pursuing its natural course. However, even this effect makes iodine of value in mild exophthalmic goiter.

R. V. B. SHIER, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Parhon, C. I. and Parhon-Stefanescu, C. A New Hyperhypophyseal Syndrome, Hyperhypophyseal Nanism (Sur un nouveau syndrome hyperhypophysaire, le nanisme hyperhypophysaire) *Rev belge d sc m d*, 1930, II, 336

The patient whose case is reported was a girl sixteen and a half years old who was only 1.38 m tall and weighed 51.5 kgm. She complained of headache which at times occurred twice a week and at other times much less frequently. During the headaches she had the impression that something was turning about before her eyes and she became nauseated. She suffered also from constipation. A definite tendency toward obesity and other signs suggested thyroid insufficiency. The patient withstood heat better than cold, but her basal metabolism was diminished by only 3.8 per cent and there was no history of chronic fatigue. The patient's intelligence was somewhat above the average. Examination revealed slight myopia and a very slight Chvostek sign. Menstruation had begun at the age of eleven years. The periods occurred every three weeks and lasted for from three to five days.

Röntgenographic examination showed the sella turcica to be normal in shape but increased in capacity, both diameters exceeding appreciably the usual dimensions for the patient's age. The sphenoidal, frontal, and maxillary sinuses and the ossification of the cranium seemed exaggerated. Almost complete disappearance of the epiphyseal cartilages of the femur and tibia demonstrated acceleration of the ossification process for the age of the child.

The authors attribute the syndrome in this case to hyperpituitarism due to excessive or precocious functioning of the hormone of maturation which caused, besides early puberty, a special form of nanism which they call "hyperhypophyseal nanism."

PRICE

Harkness, G. F. Intracranial Arteriovenous Aneurism Pulsation Exophthalmos *Internat J Med & Surg*, 1930, XLII, 243

Including the case of intracranial arteriovenous aneurism reported in this article by Harkness, 621 cases of the condition are now on record. The 3 cardinal signs are a bruit, exophthalmos, and pulsation of the eyeball. According to their origin, the aneurisms may be divided into 2 groups, the traumatic and the spontaneous. Traumatic aneurisms occur most frequently in the third decade of life, whereas spontaneous aneurisms are most common in the fifth decade. Those due to trauma are about 3 times more common in males than in females.

The causes of intracranial arteriovenous aneurism include pregnancy and arteriosclerosis, but not lues. Fifty per cent of spontaneous intracranial aneurisms are communications between the carotid artery and the cavernous sinus, 25 per cent are due to tumor, and 25 per cent are simple aneurisms of the carotid artery or ophthalmic vein.

In the differential diagnosis, exophthalmic goiter, intracranial tumor, orbital tumor, ethmoidal mucocele, orbital phlegmon, rachitic deformities, and osteoporosis must be excluded. Vascular tumors of the orbit develop and reduce more slowly, they are more easily palpated and occur less frequently in the upper and inner angle of the orbit than pulsating venous masses. The bruit from extracranial lesions located in the orbit is more feeble and limited in extent.

An early sign is the subjective and objective bruit. In some cases the exophthalmos occurs simultaneously with the bruit, but usually it develops later. Pulsation may be felt through the globe or may be limited to the internal vessels. The eyelids are usually red and swollen and show chemosis. As a rule the vision is affected, but in some cases it may remain normal. There may be a number of complications from the lesion. The adjacent cranial nerves may be involved.

The non-operative treatment consists chiefly of rest and the administration of calcium salts. This results in improvement or a cure in from 20 to 50 per cent of the cases. Paulsco and Reynier advocate the subcutaneous administration of from 100 to 250 ccm of a 2 per cent gelatin solution every four to eight days. With this treatment they obtained improvement or cure in 62.5 per cent of their cases. The surgical treatment consists of attempts to interrupt the vascular communication by ligation of the common carotid artery or the orbital vein or both. The mortality of ligation of the common carotid artery, the most common procedure, is between 7 and 8 per cent, and that of ligation of the orbital vein, 5 per cent. Combined ligation of the carotid artery and the orbital vein has a mortality of 16.67 per cent. Compression of the carotids is a safe procedure and often prognosticates the result of ligation. In some cases it controls the trouble indefinitely. Preliminary clamping of the carotid (Locke) or fractional ligation (Kerr) may be done to advantage before the final ligation. Each case is an individual problem. The simpler measures should be tried first.

Harkness reports the case of a man of thirty-seven years who sustained a basal skull fracture in an automobile accident and immediately became blind in the left eye. Six days after the accident he noticed a bruit in the left side of his head. Compression of

the left carotid artery stopped the bruit, but caused dizziness. At first, compression could be tolerated for only a few moments, but gradually it could be increased in length and frequency. It is obtained by means of a homemade spring appliance which clamps onto the neck. The patient applies the spring and removes it at will and has now been using it for four years. The bruit and exophthalmos have somewhat decreased. A small pulsating venous mass is still present under the eyebrow, but the patient is satisfied and radical surgical procedures seem contra-indicated.

ALBERT S. CRAWFORD, M.D.

Buzzard Sir E. F. Miller H. C. Riddoch, G. Yellowlees H. and Others. Discussion on the Diagnosis and Treatment of the Milder Forms of the Manic Depressive Psychosis. *Proc Roy Soc Med Lond* 1930 vol 23: 881.

A distinction is made between idiopathic manic depressive psychosis due to endogenous causes and symptomatic manic depressive psychosis following glandular dysfunction. The diagnosis is difficult. Especially difficult is the differentiation of psychoneurosis. According to Reynell, the difference between manic depressive psychosis and psychoneurosis is one of degree rather than of kind. A depressed case is not always a pure neurasthenia or a purely manic depressive case. It is often both and sometimes neither, e.g., schizophrasia. In fact, most cases are mixed.

The family history is very important. It is positive in 70 per cent of cases. A complete study of the psychobiological record of the family is of the utmost importance. Corresponding to the psychoses there are psychopathic temperamental characteristics (termed 'cycloid') and normal temperamental dispositions (termed 'cyclothymic') which are equally congenital and unchangeable. Moreover there are definite affinities between circular psychoses, the cycloid and cyclothymic dispositions and a certain type of physique called 'pycnic'. Strauss says: "If we find that our patient has had previous attacks of depression or is usually over boisterous and genial or has in fact a temperament and disposition which fits in with any of the cycloid or cyclothymic groups, and if we find further that his physique is predominantly pycnic, and that pycnic and circular cycloid or cyclothymic traits predominate in his family, we can establish a diagnosis of manic depressive psychosis with certainty."

Great stress was laid in this discussion on the physical changes that are found in the manic depressive psychosis.

The onset of the condition occurs without apparent cause. There is failure in the affective side, the patients do not cry, they are not relieved by reassurance, they think that they cannot get well, they lose their natural and acquired interests, they have suicidal tendencies, and they often suffer from hallucinations. According to Miller, the cyclothymic is a person in whom the response to stimulus both in feeling and expression ceases during phases to be

appropriate to the values of the normally integrated personality. Whereas the psychoneurotic complains of insomnia, the cyclothymic sleeps well. The manic depressive goes from one phase to another for endogenous reasons while the psychoneurotic varies according to stimuli. During phases of normality, the manic depressive presents every indication of a well integrated personality.

The manic depressive depression should be differentiated from reactive depressions, depressive catatonias, arteriosclerotic depression, dementia paralytica, senile dementia, toxic metabolic psychosis, endocrine psychosis, depressions of meningo-vascular lesions, and the psychic equivalents of epilepsy.

There is no specific treatment for these cases. Some of those due to endocrine dysfunction respond to opotherapy. It is generally agreed that psychoanalysis is contra-indicated in the psychosis. As a rule, good food, gastro-intestinal eliminants, rest, and sleep are all that can be advised. For patients with a suicidal tendency companionship is necessary. In cases with agitation, continuous narcosis for about ten days is indicated. In cases of depression, pyrexial measures should be used.

DAVID J. INFANTATO, M.D.

Hurst, E. W. and Fairbrother, R. W. Experimental Vaccinal Encephalitis in the Monkey and the Rabbit with Special Reference to the Problem of Encephalitis Following Vaccination in Man. *J. Path. & Bacteriol.* 1930, xxiii, 463.

McIntosh, J., and Scarff, R. W. The Reaction of the Central Nervous System to Vaccinia Virus. *J. Path. & Bacteriol.* 1930, xxiii, 483.

HURST and FAIRBROTHER report that following experimental inoculation of the brains of rabbits and monkeys with vaccinia virus the essential histological lesion was a fibrinous hemorrhagic and polymorphonuclear meningitis and any alterations found in the underlying nervous structures were of secondary importance.

They call attention to the striking difference between the picture of the so-called vaccinal 'encephalitis' which developed in their experimental animals and the picture of the disseminated encephalomyelitis which develops following vaccination in human beings. They draw the following conclusions:

1. Vaccinal "encephalitis" can be readily transmitted from rabbits to monkeys by the intracerebral inoculation of virulent material. The resulting reaction is primarily meningeal.

2. No definite evidence has been obtained that after intradermal inoculation and subsequent general dissemination, the vaccinia virus is capable of exciting an encephalitis, even when a mild trauma is inflicted upon the nervous system at the time of vaccination or subsequently.

3. The histological picture of postvaccinal encephalitis in man is totally different from that of cerebral vaccinia in the rabbit or the monkey. It is highly improbable that the virus of vaccinia plays a direct part in the causation of the former condition.

4 The reaction of the central nervous system to the vaccinia virus is to be sharply differentiated from the reaction to the poliomyelitis virus as the one is primarily mesodermal and the other primarily ectodermal. The virus of vaccinia is not neurotropic in the same sense as the virus of poliomyelitis.

McINTOSH and SCARFF report that they were able to demonstrate in animals lesions identical with human postvaccinal encephalitis. They believe that any large accumulations of polynuclears should be regarded as resulting from contamination by some other virus or microbe. Their conclusions are summarized as follows:

1 Virulent strains of vaccinia can produce in rabbits a definite meningo encephalitis after intracerebral, intravenous, and intradermic inoculation.

2 The lesions produced are strictly comparable with the visceral lesions in rabbits and with those of postvaccinal and postvaricellar encephalitis in man. LEO M. DAVIDOFF, M.D.

Vischia, O. The Roentgenological Diagnosis and Treatment of Tumors of the Pituitary Gland (Radio diagnostica e radio terapia dei tumori della ghiandola ipofisaria). *Radiol. med.*, 1930, viii, 409.

Vischia reviews the clinical manifestations and roentgen signs of tumors of the pituitary gland and reports two cases. In both of the cases roentgen therapy caused improvement. In one, which was followed for four years, a series of treatments resulted in partial return of vision, the disappearance of all symptoms, and reconstruction of the sella. The author, a roentgenologist, prefers irradiation to surgery. C. D. HAAGENSEN, M.D.

Sherwood, D. Chronic Subdural Hematoma in Infants. *Am. J. Dis. Child.*, 1930, xxvii, 985.

After reviewing the literature on chronic subdural hematomata in infants the author reports nine cases.

The two most constant symptoms were convulsions and enlargement of the head. Vomiting, irritability, and fever had been or were present in about half of the cases.

The most constant physical signs were those associated with enlargement of the head, namely, a bulging fontanel and separation of the sutures. Hemorrhages in the eyegrounds were found in four of the seven cases in which an examination to determine their presence was made. In three cases the disks showed changes varying from choking to atrophy. In four of the nine cases the knee reflexes were exaggerated.

Subdural tap revealed a bloody xanthochromic fluid in all cases. The spinal fluid may be clear, xanthochromic, or bloody, depending on the stage of the condition.

The diagnosis should be confirmed by subdural tap with the use of a hypodermic needle with a small syringe to avoid trauma to the cerebral veins in case a chronic subdural hematoma is not present. After the diagnosis is made a small lumbar puncture needle may be used to drain the cyst. After the

active process has subsided the patient should have the benefit of neurosurgical consultation.

The prognosis is good if the cyst is drained and there is no intercurrent infection. Sequelae develop in a high percentage of cases.

ROBERT ZOLLINGER, M.D.

Russell, D. S., and Cairns, H. Spinal Metastases in a Case of Cerebral Glioma of the Type Known as Astrocytoma Fibrillare. *J. Path. & Bacteriol.*, 1930, xxxiii, 383.

Although metastases of "primitive cell" gliomata, such as medulloblastomata and spongioblastomata, are well recognized, metastases of gliomata with highly differentiated cells, such as fibrillary astrocytomata, are not so well known.

The authors report a case of astrocytoma fibrillare of the right optic thalamus which had invaded the subarachnoid spaces by way of the right pulvinar. Many metastatic nodules were found in the subarachnoid space over the superior medullary velum and in the subarachnoid spaces in the spinal cord. The metastatic nodules were composed of the same type cells as the primary growth. They gave rise to no recognizable cord symptoms.

DAVID J. IMPASTATO, M.D.

## SPINAL CORD AND ITS COVERINGS

Kennedy, A. M., and Rogers, L. Spinal Cord Tumors. *Lancet*, 1930, ccxviii, 854.

The authors report three cases of extramedullary tumor of the spinal cord. In two cases the neoplasm was a meningioma. In one case it was a "neurofibroma" presenting a so called dumb bell growth, that is, a tumor with an expansion within the spinal canal and an expansion outside the canal which were connected by an isthmus lying in an intervertebral foramen.

All three patients were operated upon. The first two showed considerable improvement in the neurological signs. The third died of acute dilatation of the stomach fifteen hours after the operation.

LEO M. DAVIDOFF, M.D.

## SYMPATHETIC NERVES

Kuntz, A., and Morehouse, A. Thoracic Sympathetic Cardiac Nerves in Man. Their Relation to Cervical Sympathetic Ganglionectomy. *Arch. Surg.*, 1930, xx, 607.

To the accumulating evidence that the cardiac nerves are derived from the upper thoracic sympathetic ganglia as well as the cervical ganglia, the authors add information derived from dissection of both adult and infant cadavers. They cite the literature to prove that the branches derived from the thoracic ganglia carry both cardiac accelerator and visceral fibers. From these facts it is evident that bilateral extirpation of the inferior cervical ganglia will not interfere with the function of the heart. As shown by Adson and Brown, not only the

stellate, but also the first and second thoracic ganglia may be removed bilaterally without destroying the accelerator control of the heart by the sympathetic

LEO M. DAVIDOFF, M.D.

**White, J. C.** Diagnostic Blocking of Sympathetic Nerves to Extremities with Procaine. A Test to Evaluate the Benefit of Sympathetic Ganglionectomy. *J. Am. M. Ass.* 1930, xciv 1382

White suggests that as a therapeutic test to determine beforehand the effect of sympathetic ganglionectomy for vascular diseases of the extremities it would be of much greater value to inject the sympathetic trunks with procaine than to produce a vasodilatation by means of intravenous injection of a foreign protein. He presents what appears to be a relatively simple and efficient method of blocking the sympathetics in both the upper and lower extremities. In the twenty-four cases in which he has used the procedure he experienced no difficulties, he obtained definite results, and he noted no untoward effects. LEO M. DAVIDOFF, M.D.

### MISCELLANEOUS

**Marinaseo, G.** Some New Data on Neuronophagia (Quelques données nouvelles sur la neuronophagie). *Ann. d'anal. path.* 1930 vii 347

Since the author introduced the term "neuronophagia" a great deal of research has been done with regard to the phenomenon to which it is applied. Some neurologists have denied that the nerve cells are penetrated by neuronophages. Others have attributed the phenomenon described as neuronophagia to the action of the cells of the neuroglia, especially the satellite cells or the cells of the oligodendroglia. A third group believe that the rôle of neuronophages in the neuraxis is played exclusively by the cells of the microglia.

The author cites histopathological observations which seem to show that the process in neuronophagia or necrophagia is closely related to the action of ferments present in the phagocytes and changes of the reaction of the sphere of the altered nerve cells, i.e. the hydrogen ion concentration.

He describes, with illustrations, the processes of neuronophagia as they appear in infantile paralysis and rabies and also consecutive to the injection of hile or trypan blue into the nerve ganglia and peripheral nerves or at the level of the fourth ventricle.

FLORENCE A. CARPENTER

**Hovelacque, A., Maes, J., Binet, L., and Gayet, R.** The Carotid Nerve. An Anatomical and Physiological Study (Le nerf carotidien. Étude anatomique et physiologique). *Presse méd.*, Paris 1930 xxxvii, 449

In the dog, the carotid filament of the glossopharyngeal nerve is of appreciable caliber. It originates on the posterior inferior edge of the trunk of the nerve at a point which varies somewhat and takes its way obliquely downward and forward between

the two carotids to the region of the carotid sinus. The voluminous external carotid is in front of it and on a more superficial plane. The internal carotid is behind it and in a deeper plane. The carotid nerve is generally superficial to the pharyngeal nerve plexus formed by the glossopharyngeal and vagosympathetic filaments but in some cases may insinuate itself among the filaments of the latter close to their origin or may anastomose with them. In its course the nerve may give off collateral branches. Nearly all collateral branches spring from its posterior border. The most constant are posterior branches which lose themselves on the internal carotid. The nerve therefore makes numerous anastomoses with the pneumogastric and sympathetic nerves. The carotid nerve may always be followed from its termination as far as the sinus. In the dog the authors have never seen the terminal filaments lose themselves entirely in the intercarotid nerve plexus. Whenever they were able to expose the retrocarotid gland—which according to their findings is situated at the internal surface of the bifurcation usually nearer the external than the internal carotid—they saw one or two of the terminal branches of the carotid nerve lose themselves on this gland but they have never seen the whole nerve lose itself in the periglossopharyngeal plexus. They state that even in large dogs it is impossible to see the gland with the naked eye. Such a formation was observed in only about half the dogs and was no more frequent in large than in small dogs. Wilson, Gerard and Billingsley saw other small fragments scattered on the wall of the primary carotid, below the bifurcation which were not seen by the authors. The authors suggest that perhaps the terminal filaments of the carotid nerve lose themselves on these nodules.

In man, the arrangement of the vascular filaments of the glossopharyngeal nerve is much less clear than in the dog. Most of the filaments lose themselves on the carotid plexus becoming intimately involved with the elements of the latter. Only a few branches may be followed to the region of the sinus. There are numerous variations. The carotid branches have an extremely variable origin, but in the great majority of cases they are direct branches, two in number, of the trunk of the glossopharyngeal nerve originating about 1 cm. below the base of the cranium, sometimes beside each other, but more frequently in a common trunk. They descend parallel with the trunk of the glossopharyngeal anastomosing once or several times with it. On the external surface of the internal carotid they divide and anastomose with the carotid branches of the pneumogastric and the carotid branches of the sympathetic. The whole forms the carotid plexus. The carotid branches of the glossopharyngeal do not always reach the plexus at the same level. It is never possible to trace all of the terminal branches to the sinus as in the dog. However, in nearly all specimens one or several filaments of the carotid branches of the glossopharyngeal can be traced as far as the retrocarotid ganglion. These filaments reach the

ganglion either at its superior pole or at its external surface near one of its edges, alongside the constant filaments coming from the superior cervical sympathetic gland

The authors are of the opinion that the nerves which reach the carotid body are branches of the glossopharyngeal and the sympathetic which in their course have anastomosed with the branches of the neighboring nerves

Electrical stimulation of the carotid sinus or mechanical stimulation produced by dilatation of the internal wall of this sinus causes slowing of the heart beat and a manifest arterial hypotension (the latter of vasomotor origin). These circulatory reactions are absent if the region of the sinus has been previously denervated. The carotid sinus may be stimulated also by thermic variations

The authors studied the role of the carotid nerve in a reactive dog, Dog B, whose head was irrigated by a transfusor dog, Dog A, by double anastomosis of the primary carotids. Hypotension in the donor caused hypertension in the receiver and vice versa. When unilateral denervation of the carotid sinus was done in Dog B, pinching of one of the carotids of Dog A after bilateral carotid-carotid anastomosis was followed by different results according to which of the carotids was pinched. Compression of the one anastomosed to the carotid with the normal plexus in Dog B caused an immediate hypertension in the trunk of Dog B. This hypertension was clear, manifesting itself by a change of level sometimes amounting to 5 or 6 cm, it was accompanied by contraction of the spleen. When the carotid pinching was continued, the hypertension either receded progressively to its initial level in two or three minutes (the usual case) or persisted as long as the compression was continued. In both cases the suppression of the pinching of the carotid provoked at first in the body of Dog B a hypotension accompanied by splenic dilatation. These reactions were lacking if the arterial compression was exerted on the side of the denervated carotid sinus. When the nerve

plexus of the carotid sinus of Dog B was destroyed on both sides, pinching of a carotid of Dog A caused no hypertensive reaction in Dog B

The carotid nerve may be studied also by perfusing the isolated sinus of a reactive dog placed on the carotid jugular circulation of a transfusor dog. From such experiments Heymans concluded that the carotid sinuses are reflexogenic zones regulating the frequency of the heart beat, the vasomotor tonus, and the adrenal secretion in relation to the blood pressure. The same technique permitted Heymans and Bouckaert to demonstrate that the chemical composition of the blood (asphyxiated blood, blood after hyperventilation) acting at the level of the carotid zone affects the activity of the respiratory center in a reflex manner

When the head of a reactive dog, Dog B, in which the vertebral arteries have been ligated is perfused by the carotids of a transfusor dog, Dog A, by carotid carotid anastomosis and Dog A is then asphyxiated, the effect produced on the pressure of Dog B is the result of two actions: (1) the mechanical action of the variation of pressure which is communicated from Dog A to the carotid system of Dog B and which reflexly determines in the latter a variation in the opposite direction and (2) the chemical action of the asphyxiated blood in the medullary centers of Dog B. Of these two actions the former predominates and prevents the latter from taking place. By destruction of the carotid nerve the former may be prevented. The unchecked chemical action of the asphyxiated blood is then expressed by hypertension

From these findings it is evident that the carotid nerve is to be compared with the Ludwig C<sub>9</sub> on depressor nerve, the sensory cardio aortic nerve. These nerves constitute a veritable protective apparatus. The bifurcation of the carotid seems to be a sensitive zone which, by bringing the carotid nerve and the medullary centers into play, is a powerful factor in the regulation of the circulation of the blood

PICÉ

# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Hadfield G. Fat Necrosis of the Breast. *Brit J Surg* 1930 xvii 673

Fat necrosis of the breast is a benign lesion occurring most commonly in the fourth and fifth decades of life. It is a stony hard tumor often closely resembling cancer. The most frequent cause is trauma to the subcutaneous fatty tissue. There is no pain and no discharge from the nipple. The condition occurs most frequently in association with general obesity and in large pendulous projecting breasts. The predominant process is a slow aseptic autolysis or heterolysis resulting in saponification and the phagocytosis of chemical products of saponification by histiocytes and giant cells.

The importance of fat necrosis of the breast lies in its liability to mimic the early clinical signs of cancer. However, the appearance of the tumor on section differs considerably from that of cancer and an experienced observer will not mistake it. The lesion occupies exactly the confines of one or more fat lobules of the breast and is strikingly opaque, white, and dull. There is usually a central area of liquefaction and often a pseudocyst. In all cases there is irregular calcification. J. DANIEL WILLEMS, M.D.

Filler J. J. and Anderson N. P. Paget's Disease of the Nipple. *J Am Med Ass* 1930 xiv 1633

This is a report of three cases of Paget's disease of the nipple in which microscopic study of serial sections of the breast showed the presence of a true intraduct carcinoma.

The authors believe that Paget's disease of the nipple is a true cancer from the beginning, that it is an epithelioma arising in the first milk ducts near their mouths and that it should be treated by early total removal. GEORGE A. COLLETT, M.D.

Cheatle Sir G. L. The Treatment of Mammary Carcinoma by Radiation. *Brit J J* 1930 i, 807

The author believes it essential to expose the whole cancerous breast to radium irradiation and not only the part of it which contains the palpable lump. He gives the following reasons for this opinion:

1. It is impossible to say how far escaped epithelial cells have become disseminated in the breast.

2. Other parts of the gland may contain epithelial neoplasia still confined within normal boundaries which in the course of time may end in carcinoma.

3. On clinical examination alone it is rarely possible to know whether the carcinoma began in Schimmelbusch's disease (20 per cent of carcinoma of the breast are believed to originate in this lesion).

In comparing surgery with irradiation Cheatle says that the radical removal of an operable carcinoma of the breast will always be safer than inadequate irradiation of the gland.

The author describes his method of interstitial irradiation with radium element.

JACOB M. MORA, M.D.

Bertrand I. Extemporaneous Histological Examinations In the Course of Surgical Interventions, Particularly in Breast Tumors (Examens histologiques extemporanés au cours d'interventions chirurgicales particulièrement dans les tumeurs du sein). *Bull et mém Soc nat de chir*, 1937, lvi, 525.

In the last six years the author and his associates have made 100 examinations of frozen specimens in the course of surgical operations on the breast. In every instance the examination of the paraffin preparation made later confirmed the results of the extemporaneous histological examination. The condition was epithelioma in 36 cases, cystic mastitis in 17, fibro adenoma in 12, interstitial fibrosis in 8, chronic mastitis in 6, and some other disease in 21.

By the methods of Horta, Achucarro and Cajal the most delicate and fragile structures of the cytoplasm and chromatin may be demonstrated. Recent progress has been in 2 directions: (1) methods of staining and impregnation, especially the use of silver carbonate and such fixing agents as tannin; (2) the perfecting of microtomes and the perfect construction of plates which allow the use of liquid carbonic gas.

The tissue to be removed will depend on the extent and the depth of the lesions exposed at operation. From the mass handed over to him by the surgeon, the histologist removes 1 or 2 fragments (usually 2) 1 cm. square and not more than 4 or 5 mm. thick. These are placed in a bottle filled with boiling 20 to 30 per cent formalin which has been kept in a water bath for a quarter of an hour before the examination. The bottle of boiling formalin containing the thin fragments is then carried to the laboratory. In the meantime, the fixation is rapidly completed, two minutes is the time usually allowed. One per cent of trichloroacetic acid may be added to the formalin to advantage. The high temperature of the formalin is important for rapid penetration of the tissues; it does not alter the tissues and it permits remarkable cytological stainings. The tubes of liquid carbonic acid to be used must be free from water as delay will be caused if water freezes in the microtome. When the specimen is sufficiently frozen sections from 15 to 30 microns thick may be cut. This must be done at the optimal moment. If the fragment is frozen too much, the sections will be

uneven The hæmatein solution for staining must not be too old or too fresh It is best prepared the day before the examination or during the preceding week The slight extra time required to dehydrate in alcohol and to mount in balsam is well spent as air bubbles which can be very troublesome are thereby prevented

If the fragments have been removed at the correct spot the diagnosis can usually be made at once Epithelioma is easily recognized even in its atypical form Fibro-adenomata may be confused with certain sarcomata because of their size The frequent existence of plaques of more or less diffuse interstitial fibrosis, which give minimal epithelial reactions, must be borne in mind The nodules of chronic mastitis require careful study for indications of the beginning of epitheliomatous transformation or tuberculosis In cystic disease of the breast a greater number of fragments must be examined and the surgeon should be warned that six or eight minutes, a longer time than usual, will be required for the examination Photomicrographs of frozen and paraffin sections are reproduced for comparison

FLORENCE A. CARPLINTER

### TRACHEA, LUNGS, AND PLEURA

Schonwald, P. Extrapleural Thoracoplasty *North West Med.*, 1930, **XXI**, 177

This article is based on 90 thoracoplasties performed on 45 patients for pulmonary tuberculosis Thoracoplasty is indicated when recovery cannot be expected without surgical intervention, the disease is far advanced and unilateral, and extensive adhesions render impossible the induction of a satisfactory artificial pneumothorax

The importance of determining the condition of the contralateral lung is emphasized It is generally believed that thoracoplasty can be undertaken only if the other lung shows no involvement at all or only a small inactive process

Of the 45 patients whose cases are reported, 7 showed active involvement of the other lung Four (57 per cent) of these are dead In 2 (28 per cent), the condition is arrested One patient (14 per cent) is still ill Of 20 patients with slight inactive involvement of the contralateral lung, 3 (30 per cent) are dead In 4 (40 per cent), the condition is arrested Three (30 per cent) are still ill Of 22 patients with no clinical or X ray evidence of disease in the other lung, 2 (9 per cent) are dead In 16 (72 per cent), the condition is arrested Four (18 per cent) are still ill

The author points out that it is often possible to improve the condition of the less involved lung sufficiently to permit thoracoplasty on the side with greater involvement

Thoracoplasty is contra indicated if the general condition is very poor, the hæmoglobin is below 60 per cent, or a severe tuberculous complication is present elsewhere in the body A particularly unfavorable complication is tuberculous enteritis In

1 of 2 cases of the pneumonic type of tuberculous infiltration the author obtained a remarkably good result, but in the other the treatment failed because of a complicating syphilis

The best anesthesia for thoracoplasty is local anesthesia induced with novocain This is practically never followed by postoperative complications Morphine and scopolamine should be given before the operation

As in most lungs requiring thoracoplasty the important lesions are in the upper lobe, the author prefers to begin the resection with the lower ribs He states that when the upper lobe is compressed first, the secretion from its cavities may be forced into the larger bronchi and cause tuberculous pneumonia in the lower lobe

On 5 occasions, twice in 1 case, the question arose as to whether a partial thoracoplasty was feasible, 1 lobe of the lung being in such good condition that its collapse seemed unwarranted The conclusion was reached that collapse of part of a lung should be attempted only under exceptional indications However, this rule does not apply to extrapleural apicolysis which is indicated in cases showing cavitation of the apex without any appreciable disease in the rest of the lung In apicolysis, which is not a plastic of the thorax, only enough of the sternal portion of the first and second ribs is resected to gain access to the lobe of the lung and permit the apical pleura to be loosened and pushed downward to form an extrapleural cavity The cavity is then filled with a fat transplant or, if it is too large, by rubber-dam packing to cause gradual obliteration by granulation

Although in the majority of cases the classical two stage thoracoplasty creates enough collapse to facilitate good retraction and cure of the lung, in some cases, especially those of "barrel chest," one or more additional interferences may be necessary

Duval, Quenu, and Welti have described an operative approach by the axillary route They claim that even the first rib may be reached by this route quite easily, but admit that there is danger of injury to the brachial plexus during the cutting of this rib

In the author's opinion, phrenico-exeresis is not necessary or advisable before thoracoplasty It has been recommended as a test to determine whether the other lung will be able to stand the strain of more work It has been advised also as a procedure to assure more complete collapse of the involved lung Schonwald states that as a test of the other lung it is not radical enough Moreover, the involved lung is usually so much destroyed, fibrosed, and contracted and does so little breathing that the other lung has had plenty of opportunity to show its resistance during the preceding course of the disease Phrenico exeresis is unnecessary also because, in the average case, the diaphragm is already flattened and immobilized and the costodiaphragmatic sinus has been obliterated by pleurisy

In his first cases, the author performed the paravertebral extrapleural thoracoplasty of Sauerbruch, but later he changed to a combination of this pro-



cedure and Brauer's method of subscapular rib resection. Large segments of the second to the fifth or sixth rib were resected with smaller amounts of the fifth or sixth rib.

The postoperative management in the author's cases includes digitalization when cardiac support is needed, the administration of salt and glucose solutions, caffeine sodium benzoate, and camphor for stimulation, and the use of morphine or pantopon to control shock, pain and cough.

When the wound is healed, the side operated upon is strapped not too tightly with elastic adhesive. Later the adhesive is replaced by an Oelgoetz splint. Complete bed rest for two months is insisted upon. Return to a more or less normal life is permitted one year after completion of the second stage.

The postoperative mortality in the 45 cases reviewed was 4 per cent and the late mortality 15 per cent. Of the 36 surviving patients 8 are considered still ill. Two of them are suffering from tuberculous enteritis. Four or 5 of the 8 have a good prognosis. In 22 (56 per cent) of the 39 patients operated upon sufficiently long ago to warrant conclusions as to the end results the condition seems to be permanently arrested. Six patients were operated upon too recently to justify conclusions.

Of the 36 surviving patients 11 were considered just as poor risks as those who died. In 6 of these 11, the condition is now arrested.

It has been estimated that in the United States there are at least 30,000 cases of pulmonary tuberculosis suitable for thoracoplasty. As the operation offers such an excellent chance of arresting the disease, surgeons and tuberculosis specialists should cooperate to the fullest extent in order that the results may be further improved.

MORRIS A. SLOCUM, M.D.

Gabrielle H. Putrid Abscess of the Lung (Abcès putride du poumon). *Lyon chir.* 1930 XXVII, 225.

Gabrielle reports the case of a young man who was treated for a putrid abscess of the left lung by phrenicectomy and extrapleural thoracotomy in three stages. Five months after the first operation he was apparently cured.

Abscess of the lung has been diagnosed much more frequently in the last ten years than previously. This increase is due partly to the use of roentgenography, partly to the influenza epidemic of 1918 and partly to the toxic gases used during the war. In America pulmonary abscesses have multiplied enormously and are traced to surgical traumatism such as operations on the teeth, tonsils or mouth or for gastric ulcer.

The early stages of putrid abscess of the lung may not be at all alarming, attention being first drawn to the condition by the fetid character of the sputum and a sudden increase in its quantity. The physical signs are quite variable. Sometimes there is a cavity syndrome with rales, a murmur and pectoriloquy, but this syndrome may appear late or only at intervals. When as in the case reported by the

author, it is absent altogether, only the signs of pulmonary congestion are present. The roentgenographic findings vary from day to day.

Medical treatment is insufficient, although the use of emetin has given some very good results. American physicians practice bronchoscopic aspiration of the pus with injection by the same cannula, of oily antiseptic solutions. This treatment is supplemented by postural drainage. It is not often used in France. Bezançon believes it alleviates the symptoms temporarily but is not very successful. Gahnelle regards collapse therapy as the most rational method. He prefers phrenicectomy supplemented by extrapleural thoracoplasty. This should be undertaken as early as possible.

In the discussion of this report BERARD stated that except in urgent cases, medical treatment, such as the use of vaccines, anti gangrene serum and neosalvarsan (in case of fatal dilatation), general antiseptics and postural drainage should be given until defervescence occurs. Phrenicectomy and thoracotomy in stages may then be done. The first thoracotomy should be done from the fifth to the eleventh rib. Pneumotomy is indicated only when after thoracoplasty the infectious symptoms do not decrease rapidly enough and the patient's general condition will permit it. Berard always leaves the incised pulmonary cavities as well as the soft parts filled with gauze saturated with anti gangrene serum.

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Vinson P. P. Spontaneous Pneumothorax Following Bronchoscopic Aspiration of Pulmonary Abscess. Report of Three Cases. *Med. Clin. North Am.* 1930 XII, 1379.

Bronchoscopic procedures are useful in the diagnosis and treatment of suppurative pulmonary diseases. Spontaneous pneumothorax may follow bronchoscopic aspiration of a pulmonary abscess and unless a roentgen ray examination of the thorax is made after the instrumentation the condition may be overlooked. A tiny rupture of the lung occurs as the result of the coughing and straining associated with the aspiration. In two cases seen at the Mayo Clinic the rupture probably occurred in a normal portion of the lung since effusion did not follow the perforation. In another case the original rupture probably occurred in an uninfected portion of the lung since effusion did not develop until eleven days after the instrumentation.

Baumgartner and Bernard. A Gangrenous Abscess of the Lung Treated by Pneumotomy and Remaining Cured After Ten Months (Sur un abcès gangréneux du poumon traité par pneumotomie et guéri depuis dix mois). *Bull. et mém. Soc. méd. d'hop. de Par.*, 1930 LXVI, 539.

The patient whose case is reported was a man forty four years of age who entered the hospital on account of a cough and expectoration with deterioration of his general health which had begun a month before. He had had no previous pulmonary affec-

tion other than a chronic winter bronchitis. Examination revealed the clinical and roentgen signs of a gangrenous abscess of the right lung. The gangrenous nature of the lesion was evident from the foetid character of the breath and the sputum and the presence in the latter of numerous bacteria with a large proportion of anaerobes and spirochetes. Pneumonotomy was followed by recovery. When the patient was re-examined at the end of ten months the cure was still maintained. A small bronchocutaneous fistula persisted, but the fluid escaping from it was not foetid.

The authors state that in cases of this type a careful roentgen examination should be made to determine as exactly as possible the site of the suppuration in the anteroposterior plane. Under the screen the findings should be marked on the skin in the position which the patient will take on the table. The operation should be done in two stages under local anesthesia and with the patient sitting up. The first stage should consist in making a very wide osteomuscular breach and exposing the parietal pleura. The exposure of the parietal pleura must be done with great care to prevent the development of pneumothorax. After the first stage it is advantageous to make a roentgen examination with a metallic finder in the breach to ascertain whether the opening is sufficiently wide. The second stage of the operation should be done from six to eight days after the first stage and should be preceded by exploratory puncture with the thermocautery. It should consist in cleaning up of the cavity with thorough ablation of the gangrene. During the operation the patient should be instructed to cough as coughing helps to eliminate the gangrenous debris.

In the discussion of this report, DUFOUR cited three cases of gangrenous abscess of the lung in which revivification of the bacteria ultimately occurred—in one after two years, in another after twenty years, and in the third after one and a half years.

FACE

Coryllos, F. N. The Treatment of Bronchiectasis—Multiple Stage Lobectomy. Report of Two Cases. *Arch Surg*, 1930, xx, 767.

The author suggests a clinical classification distinguishing the following forms of bronchiectasis:

1. The bronchitic form, in which none of the classical symptoms of bronchiectasis is present, the bronchial lesions are slight, the parenchyma of the lung is healthy, and the pathological changes are revealed only by roentgenograms made after the injection of iodized oil.

2. Early uncomplicated bronchiectasis in which the bronchial lesions appear in the roentgenogram as saccular dilatations and there is clubbing of the fingers, but no other symptom.

3. Complicated bronchiectasis with multiple small bronchitic abscesses, pneumonitis, foul sputum, a persistent cough, a septic appearance, intermittent fever, loss of weight, and clubbing of the fingers.

4. Bronchiectatic abscesses, unilobular, unilateral, or diffuse.

The treatment to be directed against such a chronic and slowly progressing disease must be long-continued and progressive. In the first form, hygienic measures, a hot dry climate, and postural and bronchoscopic drainage may suffice. In the second form, pneumothorax, phrenicectomy, and thoracoplasty must be considered. In the later types only eradication of the diseased parenchyma of the lung can produce a cure. This should be done by lobectomy, cautery pneumectomy, or exteriorization, depending upon the requirements of the particular case. The author recommends a graded operation in which the following procedures are carried out in the order named: artificial pneumothorax, phrenicectomy, thoracoplasty, and lobectomy.

Two cases of advanced bronchiectasis in which a cure was obtained by this technique are reported in detail.

J. DANIEL WILLEMS, M.D.

Maxwell, J. Primary Malignant Intrathoracic Tumors. *J. Path. & Bacteriol.*, 1930, xxxiii, 233.

Maxwell reviews 239 cases of primary malignant intrathoracic tumors and reports the histological findings in 135.

Primary bronchial carcinoma was found in 184 cases. Tumors of this type fall into two groups, an obviously columnar-celled group with a tendency toward squamous metaplasia, and a small oval-celled group which are slightly more common. The morbid anatomical findings and the microscopical findings are discussed.

The oval-celled carcinomata are described in detail. It is believed that they spring from the basal layer of the bronchial epithelium. None of the tumors in the series reviewed was shown to have arisen directly in the epithelial lining of the pulmonary alveoli.

The mediastinal tumors are a heterogeneous group, some being the result of infiltration or metastasis from a small primary bronchial focus, and others being accepted as sarcomata arising in the mediastinal glands. No conclusive evidence could be found to show that any of them arose within the thymic remnants.

Primary pleural tumors are shown to be a rare but well defined group.

SAMUEL KAHN, M.D.

Ferguson, F. R., and Rees, W. E. Cerebrospinal Metastases from Unsuspected Pulmonary Carcinoma. *Lancet*, 1930, cccviii, 738.

Primary carcinoma of the lung is becoming more frequent and probably constitutes 4 per cent of all carcinomata. The increase has been attributed by some to the influenza epidemics and by others to the inhalation of foreign material from the atmosphere such as motor exhaust gases and the tar used in the spraying of roads. Accompanying the increase in the primary lesion there has been a corresponding increase in metastatic involvement of the central nervous system.

cedure and Brauer's method of subscapular rib resection. Large segments of the second to the fifth or sixth rib were resected with smaller amounts of the fifth or sixth rib.

The postoperative management in the author's cases includes digitalization when cardiac support is needed, the administration of salt and glucose solutions, caffeine sodium benzoate, and camphor for stimulation, and the use of morphine or pantopon to control shock, pain, and cough.

When the wound is healed, the side operated upon is strapped not too tightly with elastic adhesive. Later, the adhesive is replaced by an Oelgoetz splint. Complete bed rest for two months is insisted upon. Return to a more or less normal life is permitted one year after completion of the second stage.

The postoperative mortality in the 45 cases reviewed was 4 per cent and the late mortality 15.5 per cent. Of the 36 surviving patients, 8 are considered still ill. Two of them are suffering from tuberculous enteritis. Four or 5 of the 8 have a good prognosis. In 2 (56 per cent) of the 39 patients operated upon sufficiently long ago to warrant conclusions as to the end results the condition seems to be permanently arrested. Six patients were operated upon too recently to justify conclusions.

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# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Draper, J W The Surgical Importance of the Omentum *Ann Surg*, 1930, 70, 705

The findings of experiments on animals indicate that the omentum is the chief absorbing agent in the peritoneal cavity and that its removal causes a four-fold delay in peritoneal absorption. The latter observation explains the systemic and often immediate clinical improvement noted after omentectomy in cases of so called chronic intestinal toxæmia.

Draper believes that omental deviants or directional abnormalities may cause mutilating pressure on the gut, chiefly the colon, terminal ileum, and duodenum, and that through the damaged gut both endotoxins and exotoxins pass largely by way of the omentum into the body cavity by way of the blood stream. He has removed the entire omentum in more than 200 cases in which roentgen examination revealed the presence of omental deviants exerting pressure on the bowel. He concludes that the mechanical release of omental pressure on the gut helps to explain the enigmatic improvement so often noted after the surgical treatment of such differing disorders as epilepsy, diabetes insipidus, arthritis, dementia præcox in its early stages, neurasthenia, hay fever, asthma, non-specific skin disorders, personality changes, and behavioristic abnormalities in children.

ROBERT ZOLLINGER, M D

Higgins, G M, and Bain, G G The Absorption and Transference of Particulate Material by the Great Omentum *Surg, Gynec & Obst*, 1930, 1, 851

The studies herewith reported support very definitely the hitherto recorded observation that the great omentum readily absorbs and removes foreign particulate material. They show also that its secretory activity and adhesive and absorptive functions are by no means severely impaired when it is withdrawn from the peritoneal space and carefully isolated in a pouch in the abdominal wall.

Relatively soon following an injection of graphite into the pouch, the secretory function of the omentum is manifested by an abundance of black particles firmly adherent to its mesothelium. The extensive vascularity of the organ probably accounts for the large quantities of serous fluid that are secreted. Within a few minutes the black particles make their way into the omentum where the hitherto inactive histocytes begin their function of phagocytosis. As migration of histocytes back and forth through the mesothelium is not frequent, the authors are inclined to believe that the more extensive phagocytosis occurs within rather than outside of the omentum. The transfer of the free particles into the

omentum is very rapid, and it may be conjectured that a return of some of the fluid into the omentum carries the particles beneath the mesothelium.

After granules have entered the omentum and phagocytosis has occurred, the histocytes accumulate along the larger blood vessels of the organ. Thus these blood vessels appear black in the omentum removed a few hours after an injection. The lumina of these blood vessels are devoid of graphite and graphite-laden cells, and the endothelium is likewise clear. The histocytes with graphite granules are closely massed along the vessels, and the evidence leads to the conclusion that they move, if not in channels, in spaces surrounding but not connected with the blood vessels. Occasionally the authors have noted in their sections an endothelial pattern or space suggesting a lymphatic vessel either with and without graphite and devoid of erythrocytes. These areas have been identified in close proximity to blood vessels. Although they resemble the lymphatic distribution around the portal vein, the authors hesitate to ascribe to them a lymphatic potentiality.

In conclusion the authors state that while lymphatic vessels have not been demonstrated conclusively within the omentum, absorption from this organ occurs essentially by way of the lymphatics of the diaphragm and the mediastinum.

## GASTRO-INTESTINAL TRACT

Picard, E, Lambin, P, and Henry, P Plastic Linitis of Acute Evolution Accompanied by Severe Anæmia (Linite plastique à évolution aigüe accompagnée d'anémie grave) *Rev belge d sc méd*, 1930, 11, 229

Plastic linitis is usually characterized by very slow development, but LeNoir has described what he calls the septicæmic form which generalizes rapidly. The authors report a case with a fulminating course ending in death about two months after the appearance of the first symptoms.

The patient was a woman fifty years of age who for a month or two had felt a vague disturbance in the epigastrium and had had no appetite. About twenty days before she entered the hospital she was seized suddenly with very severe epigastric pain radiating under the costal margin on the right side and up under the right scapula. Later, the pain radiated to the left side and the lower limbs. Several days after the occurrence of these acute attacks, a progressive jaundice set in and ecchymoses appeared on the thighs and calves. The patient rapidly became thinner.

Abdominal palpation revealed marked epigastric rigidity. The entire infra umbilical region was very painful. The hard and irregular edge of the liver

extended to the umbilicus. The gall bladder seemed palpable. There was a severe anemia with young forms of cells of the myeloid group. A diagnosis of generalized carcinosis of the liver and spinal cord was made. The patient died six days after she entered the hospital.

From the autopsy findings it was evident that *hinitis plastica* which at first was clinically latent had suddenly revealed its presence at the time of its generalization by the blood and lymphatic routes. The severe pain and signs of hepatic insufficiency were caused by rapid invasion of the liver by diffuse cancerous thrombophlebitis.

The anemia in this case was more severe than that usually found in the cancerous subject. It had nothing in common with pernicious anemia. In spite of the intense erythroblast reaction, there was not a single circulating megaloblast. All of the hematological characteristics of anemia from medullary carcinosis were present (a marked leucocytosis with myelocytosis and a large number of normoblasts). The blood picture observed the day before death (myeloblasts 4 per cent) was not unlike that of the erythroleukemic syndromes described by Dr. Guglielmo and Rietano, which are characterized by complete primary hyperplasia of the erythropoietic and granulopoietic tissues. This shows that examination of the peripheral blood by itself does not always aid in separating the secondary reactions of the hematopoietic organs and their primary hyperplasias.

The cause of the severe anemia may be only conjectured. Because of the presence of an ulceration of the gastric mucosa, the occurrence of repeated occult hemorrhages cannot be excluded. However, there was no melæna and the guaiac reaction was negative. Anemias caused by chronic blood loss are clearly hypochromic while in this case the color index was equal to or above unity. The cancerous invasions of the spinal cord may have been a factor but extensive medullary metastases may exist without a marked hematological reaction and even without anemia. It seems to the authors most likely that the extensive lesions of *hinitis* may hinder the assimilation of foods, the cleavage products of which the organism uses for the synthesis of hæmoglobin or red blood cell stroma and thus favor a severe loss of globulin when any condition favoring anemia is at work.

PAGE

Bryce A. G. Acute Perforation of the Stomach and Duodenum *Brit. M. J.* 1930 1: 774

In 123 cases of acute gastric or duodenal perforation in which suture without gastro enterostomy was performed within twelve hours after the perforation, the immediate mortality was 9.6 per cent and in 26 cases in which the operation was performed more than twelve hours after the perforation it was 26.9 per cent.

In a follow up made two years later 32 per cent of the patients stated that they were entirely free from gastric disturbances.

The immediate results after suture alone in pyloric and duodenal perforations are practically identical. Secondary operation is more frequently indicated in pyloric perforations.

Closure must be safe. In exceptional cases, safety may demand something more radical than mere suture, with or without gastro enterostomy. When more radical procedures are not justified, careful apposition of the edges of the perforation by suture with reinforcement of the suture line by an omental graft is preferable to the infolding of a wide area of stomach wall.

Gastro enterostomy should usually be reserved for cases in which stenosis has already developed or is apt to result from healing. The presence of an unnecessary gastro enterostomy is not without risk. The systematic performance of gastro enterostomy at the time of perforation without a definite indication is not likely to diminish the mortality.

JOHN J. MALONEY, M.D.

Guimbellot. The Cause of the Sudden Pain in the Perforation of Gastroduodenal Ulcer (Sur la cause de la douleur brusque dans la perforation de l'ulcère gastroduodénal). *Bull. et Mém. Soc. Nat. de Chir.* 1930, lvi, 237.

In a recent report on silent perforation of gastro duodenal ulcer, Gregoire raised the question whether the sudden knife like pain at the onset is the immediate symptom of gastric rupture or follows the perforation and is related to the onset of peritonitis. Rouhier answered this question by citing two cases in which the sudden pain occurred before perforation and when peritonitis was already present. Guimbellot reports two similar cases.

Guimbellot's first case was that of a man forty years of age who was seized with a sudden severe pain in the right iliac fossa which persisted the next day and was accompanied by vomiting. At laparotomy, a white plaque  $\frac{1}{2}$  in. in diameter was found on the anterior surface of the pylorus. This was covered by the transverse colon, which showed an analogous plaque. There was no perforation. Posterior transmesocolic gastro enterostomy was followed by recovery.

The second case was that of a man twenty six years of age who was suddenly seized with severe abdominal pain which was most severe in the epigastric region. At laparotomy, a flood of yellow liquid escaped from the peritoneal cavity. The stomach was found distended by gas. On the anterior surface of the region of the pylorus in the center of a red zone there was a white irregular, and thinned plaque. The latter was in contact with the lower surface of the liver which showed a corresponding white plaque. The stomach was not adherent to the liver. No perforation and no other ulcer could be found. Drainage of the peritoneal cavity was followed by uneventful convalescence.

The author concludes that peritonitis may sometimes develop without complete perforation of the ulcer, and that the sudden pain at the onset may be

related to this condition rather than to the mechanism of gastric rupture or contact of the gastric contents with the peritoneum

FLORENCE A. CARPENTER

**Lewisohn, R. Operative Results in Partial and Subtotal Gastrectomy for Gastroduodenal Ulcers** *Ann Surg*, 1930, **xc**, 520

Lewisohn states that the mortality of partial and subtotal gastrectomy for gastroduodenal ulcers compares favorably with that of conservative measures. Of sixty-nine partial and subtotal gastrectomies reviewed by him, fifty-six were primary and thirteen were secondary operations. In five cases the operation was performed during or immediately after a profuse hemorrhage. Of the fifty-one resections which were done for chronic ulcer, twenty-three were done for gastric ulcer, three for pyloric ulcer, and twenty-five for duodenal ulcer. After trying various methods of resection the author regards the retrocolic Billroth II procedure as the method of choice. In a few instances the anastomosis was performed with the aid of a Murphy button.

In the period from 1920 to 1928 the retrocolic Billroth II method (either in the form of the Hofmeister anastomosis or with the use of a Murphy button) was employed in forty-four cases with only one death. The mortality was therefore 2.27 per cent, which was slightly lower than that of gastroenterostomy in the years when the latter operation was more extensively employed.

Of five patients with bleeding gastroduodenal ulcer, three survived. In the thirteen cases of secondary operations there were six deaths. Eight patients had had two or three previous operations. Five were operated upon for gastrojejunal or jejunal ulcer, six for recurrent gastric or duodenal ulcer, and two for malfunctioning stomata.

HARRY W. FINE, M.D.

**Ballin, M., and Morse, P. F. Intussusception Complicating Visceral (Henock's) Purpura** *Ann Surg*, 1930, **xc**, 711

The authors report a case of purpura with intussusception and draw the following conclusions:

1. Intestinal purpura may produce symptoms resembling those of intestinal obstruction or intussusception by causing intestinal paralysis, and may suggest intussusception also by the escape of blood from the purpura through the rectum.

On the other hand, a true intussusception may be caused by thickening of the intestines produced by hemorrhage from the purpura which becomes invaginated into the bowel below and acts in the same way as an intestinal polypoid tumor.

The presence of obstructive symptoms with intussusception therefore requires great judgment to determine whether a true intussusception is present or only intestinal rigidity caused by the hemorrhages. Obviously, intussusception requires surgical interference even in the presence of purpura.

ROBERT ZOLLINGER, M.D.

**Ochsner, A., Gage, I. M., and Cutting, R. A. The Comparative Value of Splanchnic and Spinal Anesthesia in the Treatment of Experimental Ileus** *Arch Surg*, 1930, **xc**, 802

In the experiments reported, which were performed on dogs, the results were recorded by kymographic tracings.

Vagus stimulation produced an increase in tone and intestinal movement, whereas section of the vagi caused a marked diminution in tone and intestinal movement except for a temporary increase due to the mechanical stimulation produced by the cutting. Stimulation of the splanchnics produced a characteristic cessation of all intestinal movement and a loss of tone, whereas cutting of the splanchnics produced, aside from a temporary decrease in intestinal movement due to the mechanical stimulation, an increase in tone and intestinal movement. Following bilateral splanchnic section stimulation of the vagi was associated with an excessive reaction in the gut.

In previous publications the authors demonstrated the efficacy of splanchnic anesthesia in the treatment of adynamic ileus. In the earlier experiments the anesthesia was induced with novocain alone. In the experiments herewith reported both novocain and nicotine were injected into the splanchnic area. Rosenstein and Koehler obtained very striking results from the introduction of nicotine into the splanchnic area, but the authors' results from this drug were very disappointing. The nicotine solution was injected into the splanchnic area according to the technique of Kappis. In every instance the injection was followed by a marked, inconstant increase in the blood pressure which, except in three instances, was always greater than 90 mm Hg. This effect lasted no longer than three minutes, the pressure then returning to or falling slightly below the normal. The effect on the duodenum, ileum, and colon was inconstant with respect to changes in the intestinal tone and the amplitude of intestinal movement. In five cases the tone of the ileum was increased between 10 and 50 mm. In all others in which a change was noted, it was in the direction of a decrease. When novocain solution was used as the anesthetic agent very satisfactory results were obtained in ileus. A constant rise in the intestinal tone and an increase in intestinal movement were observed. The average increase in tone on the kymographic tracing was 29.5 mm, and the average increase in the amplitude of movement, 11.2 mm. It was found that the increase in tone was considerably more transitory than the increase in intestinal movement. The total duration of the motor effect of posterior splanchnic anesthesia varied considerably. It was ordinarily not less than from five and one-half to six minutes and occasionally it seemed to persist for as long as a half hour or longer. The average decrease in the blood pressure noted in the experimental animals was 20 mm Hg. It was found that splanchnic anesthesia had no effect on the rate of intestinal movement.

Spinal analgesia was induced in thirteen animals suffering from paralytic ileus superimposed upon a mechanical ileus. Technically it was impossible to introduce a needle directly into the subarachnoid space without first performing a laminectomy. The phenomenon most commonly observed following the successful induction of spinal analgesia was a fall in the blood pressure. In some instances this occurred within half a minute. It was usually gradual, but was more rapid than, and from two to three times as great as that which follows the induction of splanchnic analgesia and was followed by an increase in tone and in intestinal movement. The increase in tone was less marked and of shorter duration than that occurring after splanchnic analgesia. The increase in intestinal movement was equally constant and persisted as long if not longer. If a drug such as atropin, which paralyzes the vagus or epinephrin or ephedrin was used the beneficial effects obtained by splanchnic or spinal analgesia were nullified probably because of stimulation of the inhibitors or sympathetics distal to the chemical section of the cord or splanchnics.

The authors conclude that splanchnic analgesia is of value in combating paralytic ileus but as its effect is exerted largely on the small bowel it should be closely followed by an enema so that the contents of the large bowel may also be evacuated. They prefer the technique of Kappis with the injection of 20 c cm. of a 2 per cent solution of novocain at each of four points. Epinephrin and ephedrin should not be employed.

**Peigneaux and Fruchaud. Serious Digestive Disturbances in a Fifteen Year Old Girl Which Were Related to Malformations of the Duodenum and Right Colon—Anomaly of Torsion of the Primitive Intestinal Loop. Anterior Gastrojejunostomy. Colocolostomy on the Transverse Colon. Colopexy of the Right Colon. Cure.** (*Troubles digestifs graves chez une jeune fille de quinze ans en relation avec des malformations portant sur le duodénum et le colon droit—anomalie de torsion de laanse intestinale primitive. Gastrojejunostomie antérieure. colocolostomie sur le colon transverse. colopexie du colon droit guérison*). *Bull et mem Soc nat de chir*, 1930 lvi 335.

Ombredanne who read the report of this case before the Society reminds us that the primitive umbilical loop attains its final position by two successive movements: torsion on a postero-anterior axis represented by the superior mesenteric artery, and a lateral movement. Normally, the torsion is anti-clockwise and the lateral movement is to the right. If torsion is clockwise and the lateral movement to the left the result is true visceral inversion. If torsion is clockwise (abnormal) and the lateral movement is to the right (normal) the duodenum and the liver remain on the right, the third portion of the duodenum is parallel with and in front of the superior mesenteric artery, the caecum is on the right, the sigmoid flexure is on the left and the transverse colon passes behind the superior mesen-

teric artery and behind the duodenum, which crosses it at a distance.

In the case reported by Peigneaux and Fruchaud, which represented the third type of movement, a thick pulsating cord, evidently the pedicle of the mesenteric artery and the root of the mesentery, passed in front of the transverse colon. When an attempt was made to reduce the seeming volvulus, torsion of the mesenteric pedicle occurred and it became clear that this was a case not of acquired volvulus, but of congenital malformation. The anomaly involved also the duodenum which was found fixed and lost in a mass of loose cellular tissue containing fibrous tracts.

The symptoms in this case had been obstinate constipation, crises of colic, the vomiting of food and bile, and fixed pain above and to the right of the umbilicus.

Ombredanne believes that the colicky pains were caused by compression of the colon by the mesenteric artery, and that most of the other symptoms, and especially the vomiting and fixed pain, were due to the anomalous situation of the duodenum in the mass of connective tissue and fibrous tracts which probably reduced the distensibility of that part of the small intestine.

Three operative procedures were carried out: anastomosis of the stomach and the proximal part of the jejunum, annular transverse colocolostomy, and three weeks later, colopexy. Six weeks after the first operation the patient was in good condition.

Three similar cases are cited from the literature—one reported by Banzet (Roud's case) and two reported by Duplène. FLORENCE A. CARPENTER.

**Appelmans R. Van Goldsenhoven F. and Boine, J. Chronic Stenoses of the Duodenum.** (*Contribution à l'étude des sténoses chroniques du duodénum*). *Rev belge d sc med*, 1930 ii 1.

Chronic duodenal stenoses are relatively common and their causes are numerous. Clinically they are manifested by digestive and general disturbances, the latter due to intoxication from duodenal stasis. Roentgenologically they may be recognized from the dilatation above the obstruction. In the dilated part the food stagnates and undergoes a violent stirring up. Sometimes very narrow stenoses cause very slight digestive disturbances. In such cases the clinical picture is dominated by signs of duodenal intoxication—great loss of weight, physical and psychic asthenia, and headache. When such general symptoms are associated with digestive disturbances, X-ray exploration should be undertaken even when they are indefinite.

The symptoms vary with the cause of the stenosis. Duodenal stenoses may arise from colonic anomalies. It is interesting to examine the ascending colon when roentgen examination reveals the presence of duodenal dilatation with stasis. When symptoms of periduodenitis are present with chronic stenosis of the duodenum, the cause of the perivisceritis should be sought. Next to duodenal ulcer, the appendix is

most often to blame. Duodenal stenoses may be complicated by hæmorrhages without any apparent cause in the gastroduodenal mucosa. Duodenal and pyloric ulcer are frequent complications of duodenal stenosis. In the presence of a duodenal ulcer the duodenum should be examined for duodenal stasis and the treatment should be directed toward the latter if it is found.

Medical treatment is of value especially in the less serious stenoses. As a rule, however, operation ultimately becomes necessary. In cases of colonic anomalies surgery is the only rational treatment. In perivisceritis the initial inflammatory focus should be suppressed and as a rule a duodeno-jejunostomy should be done. The latter is the treatment of choice also in cases of compression of the duodenum by the root of the mesentery.

The authors report twenty nine cases of chronic stenosis of the duodenum and supplement their article with an extensive bibliography. PACE.

Nickel, A. C. Duodenitis, Duodenal Ulcer, and Gastric Ulcer. *Ann Int Med*, 1930, 11, 1084.

A causative organism of peptic ulcer was searched for in surgically resected tissue, various foci of infection, and experimental lesions. Cultures made from tonsils, extracted teeth, and infected prostate glands were injected intravenously into rabbits to determine their virulence and their affinity for the stomach and duodenum. The dose was approximately 1 c cm for each 300 gm of body weight.

Cultures were obtained from 21 patients who had duodenitis without ulceration as revealed by operation. Eighteen had 1 or more foci of infection which contained a streptococcus with selective affinity for the stomach or duodenum. Of 89 rabbits which were injected with these streptococci, 51 per cent developed lesions in the stomach or duodenum or both.

Patients with duodenal ulcer, with or without associated duodenitis, were studied in the same way. Of 134 such patients, 93 had a focus of infection containing streptococci with an affinity for the stomach or duodenum. Cultures from the foci of infection were injected into 675 rabbits. In 52 per cent of the rabbits receiving injections of cultures from the teeth, 51 per cent of those receiving injections of cultures from the tonsils, 50 per cent of those receiving injections of cultures from the prostate gland, and 72 per cent of those receiving injections of material from surgically resected ulcers, lesions developed that resembled those in the patients from whom the injected material was obtained.

Of 31 patients with gastric ulcer, 24 had a focus of infection containing a streptococcus with an affinity for the stomach or duodenum, and of 96 rabbits given injections of cultures from the gastric lesions, 64 per cent developed lesions of the stomach or duodenum or both. The most common sites of lesions elsewhere in the rabbits were the joints.

Of 94 control patients, only 11 per cent harbored streptococci with an affinity for the stomach or duodenum, whereas of the patients with peptic ulcer

73 per cent harbored such streptococci. Lesions of the stomach or duodenum developed in only 9 per cent of the rabbits of the control group in contrast to 52 per cent of the rabbits injected with strains isolated from patients with peptic ulcer.

Four pieces of tissue from an apparently grossly unchanged stomach and duodenum were cultured. From 1 of the 4 pieces a few streptococci were recovered. However, neither this culture nor any of the other organisms found in cultures of the grossly unchanged stomach or duodenum produced lesions of the stomach or duodenum in 9 rabbits given injections of a dosage equal to, or  $1\frac{1}{2}$  times greater than, the usual dosage employed.

Three of the strains of streptococci were studied for the presence of endotoxins and ectotoxins having a selective affinity for the stomach or duodenum. After centrifugalization of eighteen hour broth cultures of the organisms the supernatant fluid was decanted, passed through a Berkefeld filter, proved sterile, and then injected intravenously into rabbits. The sediment containing the bacteria was then washed 3 times in a sterile physiological solution of sodium chloride, diluted to the original volume with physiological solution of sodium chloride, heated to 60 degrees C for forty minutes, proved sterile, and also injected intravenously into rabbits. Of 13 rabbits given injections in the usual manner with living broth cultures of the 3 strain of bacteria, 0 (69 per cent) developed lesions of the stomach or duodenum. Of 6 rabbits given injections of washed, dead bacteria suspended in sodium chloride solution, 4 developed similar lesions, of 10 rabbits given injections of the sterile filtrate obtained from the broth cultures of the organisms, 9 developed hemorrhagic lesions of the stomach or duodenum, and of 6 rabbits receiving injections of similar amounts of the unincubated broth that had been used in making the cultures, none developed lesions. The dosage of the suspended dead bacteria was the same as that of the living cultures. The dosage of the filtrate was slightly larger, varying from 5 to 12 c cm.

Sections of duodenal tissue from 22 cases of duodenitis were studied. In 17 (81 per cent), diplo-streptococci were found in the sections stained with Gram-Weigert stain. There was often the usual mixture of organisms, mainly Gram positive and Gram-negative bacilli of various sizes and shapes, many of them spore forming organisms on the surface of the mucosa and extending down into the crypts.

The experimental lesions occurring in the duodenum, consisted mainly of submucous petechial hæmorrhages which were often confluent. Sometimes there was stippling of the serosa of the affected duodenum similar to that described by Judd as characteristic of duodenitis in man. When the lesions were in the stomach they were usually in the pyloric portion or along the lesser curvature. They were less numerous and more discrete than those in the duodenum. Sometimes the hemorrhagic, necrotic center was sloughed out, producing what resembled a superficial erosion.



Microscopically, the duodenitis in animals resembled the duodenitis found in man, but was more marked.

Whenever the culture of the resected tissue of the stomach or duodenum consisted predominantly of green producing streptococci intravenous injection into rabbits caused acute hemorrhagic lesions of the stomach or duodenum in a large percentage of the cases.

Thus a streptococcus like the one isolated and described by Rosenow was consistently isolated from various foci of infection and from the surgically removed tissues in cases of duodenitis and duodenal and gastric ulcer and was shown to have ectotoxins and endotoxins which affected specifically the mucous membrane of the stomach and duodenum. On the basis of these findings the author believes it justifiable to conclude that this streptococcus is a causative agent in duodenitis, duodenal ulcer, and gastric ulcer.

W. N. ROWLEY, M.D.

Aschner, P. W. and Karelitz, S. Peptic Ulcer of Meckel's Diverticulum and the Ileum. *Ann Surg* 1930, vii, 573.

Heterotopic gastric mucosa has been shown to occur at the umbilicus as a result of anomalous developmental structures arising from the omphalomesenteric duct. Such areas of mucosa have been demonstrated to produce a secretion containing free hydrochloric acid and pepsin which causes irritation, erosion and ulceration of the surrounding skin. The secretion could be excited by the ingestion of food or by local mechanical stimulation.

Heterotopic gastric mucosa has been demonstrated also in Meckel's diverticula which have retained their connection with the lumen of the ileum. Chronic ulcers causing pain, hemorrhage, and perforation and histologically identical with peptic ulcer of the stomach, duodenum, and jejunum have been found in Meckel's diverticulum and the ileum. In twenty-one cases gastric mucosa was demonstrated in the diverticulum. The ulcers occurred in the intestinal type of mucosa adjoining heterotopic gastric mucosa. They were located most frequently at the neck of the diverticulum which was usually completely lined with gastric mucosa.

The occurrence of this type of lesion lends strong support to the theory that the free hydrochloric acid secreted by the gastric mucosa is the most important activating factor in the etiology of peptic ulcer.

HOWARD A. McKNIGHT, M.D.

Bargen, J. A., and Jacobs, M. F. Inflammatory Cæcal Tumors. Diagnosis of Types of Obscure Etiology. *Arch Surg* 1930, vii, 832.

In the differential diagnosis of tumors of the ileocecal region malignant disease must be given first consideration. Carcinoma is the most common of the malignant conditions. Lymphosarcoma is rather rare. Hyperplastic tuberculosis is also of importance. Actinomycosis is uncommon. The other benign tumors, such as cholesteatoma, lipoma,

leiomyoma, mucous cyst, and hemorrhagic infarction, are rare, but must be considered in the differential diagnosis.

It is gratifying to be able to determine that a lesion is not malignant without exploration, but to be certain of this is difficult. Renal enlargement and a retroperitoneal lesion should not be difficult to distinguish from an ileocecal lesion. The roentgenogram has greatly facilitated this differentiation. The greatest difficulty in diagnosis is experienced in cases with a palpable mass and positive roentgenological findings when the appearance of the patient is not that usually associated with a malignant lesion in the ileocecal region. In such cases, the history offers the most important clue. The usual absence of anemia and the patient's general sense of well being also offer important differential suggestions. Finally, the roentgenogram should be carefully studied to determine whether or not there is a filling defect typical of a malignant condition, this type of filling defect is rarely present in such cases.

Honck, E. Inflammation of the Appendix. Its Influence on the Pelvic Organs and the Vertebral Column (Pain in the Small of the Back, Lumbosacral Syndrome). *Am J Surg*, 1930, viii, 872.

The spinous process of the fifth lumbar vertebra is closely related to numerous types of low back pain. In acute and chronic appendicitis, it is painful when subjected to pressure. Many patients state that the pain started in the region of that process. Careful palpation will elicit pain also along the long dorsal muscles between the spinous processes and the ilium and in the gluteal muscles especially below the crest and the posterosuperior spine of the ilium.

Another spot sensitive to pressure—especially in cases of sciatica and allied complaints—is lower down, near the juncture of the internal and middle thirds of an imaginary line drawn from the beginning of the anal groove to the trochanter major. Acute pains radiating to the back of the thigh and the outer part of the calf of the leg are often produced by pressure on that spot directed slightly inward. It is evident that, by such pressure, the nerve trunks combining to form the large iliac nerve are pressed near the spot where they leave the pelvis and rest on the lower and posterior spine of the ilium.

If palpation is continued forward to the anterior abdominal wall along the crest of the ilium (which is frequently very sensitive), the sensitive spots characteristic of disease of the appendix may be discovered.

It is advisable to palpate the pelvic organs through the rectum as the impression obtained in this way is far more accurate than that obtained by examination through the vagina.

The relation between a diseased appendix and other organs is due mainly to the vascular nerves. It has been known for a number of years that inflammations of the appendix exert a permanently injurious effect on the pelvic organs.

The first consequences of blood congestion in the pelvic organs caused by way of the sympathetic nerve are increased menstruation and other menstrual discharges

The engorgements of the pelvic organs originating from the appendix by way of the sympathetic nerve cause the entire ligamentous apparatus of the uterus to become relaxed. In many instances a movable dorsal position of the uterus is the result of repeated inflammations of the appendix. This relationship was first described by Edebohls. In some cases a fixed dorsal position of the uterus is the result of exudation in the pouch of Douglas caused by appendicitis

Inflammations of the appendix originating in childhood are characterized not only by pain in the abdomen, but also by sensitivity of the process of the fifth lumbar vertebra to pressure and occasionally by pains in the "small of the back." Rectal examination demonstrates that the pelvic peritoneum is also painful. The week succeeding the completion of menstruation is the time during which acute appendicitis develops in young girls and women

In all inflammations of the appendix the prevertebral ganglia (coeliac ganglia) above the umbilicus are invariably sensitive to pain. All of the elements contributing toward the formation of these ganglia, including the splanchnic nerve, become irritated. As the splanchnic nerves are connected by way of the spinal cord with the ganglia of the funicular margins of the middle part of the thoracic section of the vertebral column, an acute inflammation of the appendix may lead to disturbances in the blood circulation in the thoracic part of the vertebral column followed by loss of rigidity and the development of a secondary curvature. CHARLES F DU BOIS, M D

**Laurent, P** Subacute Invagination of the Sigmoid Colon into the Rectum Due to a Sigmoid Cancer (Invagination subaigue du colon sigmoïde dans le rectum provoquée par un cancer sigmoïdien) *Bull et mém Soc d chirurgiens de Par*, 1930, xxi, 162

Laurent was called in consultation to see a woman sixty five years of age who for several days had presented symptoms of intestinal obstruction and for twenty four hours had been threatened with complete intestinal occlusion. For several weeks she had had attacks of abdominal pain and occasionally had noticed that her stools were glary and showed a slight amount of blood. Two days before she was seen by Laurent she had had a more severe attack of obstruction. Examination then revealed a tumor above the rectum. The introduction of a rectal sound caused the evacuation of gas, which was followed by relief of the discomfort

At the time the patient was seen by Laurent her pulse was 104, her temperature was 38 degrees C, and she complained of abdominal pain. The abdomen was tympanitic. No peristaltic contractions were visible. Palpation was painful. Slight muscu-

lar defense was present. High in the ampulla there was a large, hard tumor which bled on palpation. A diagnosis of cancer, probably of the sigmoid and rectum, was made

At operation performed under local anæsthesia the sigmoid loop was exteriorized and fixed to the skin. Twenty four hours later it was opened, and on the fifth day transverse section was done. As soon as the loop was opened the signs of stasis disappeared, but after four or five days the patient complained of pain which was especially severe in the rectum. Examination then revealed that the tumor which at first was situated very high had descended and was pressing against the anal sphincter. The entire rectal ampulla was filled by a sausage shaped body with a hard, edematous, and bleeding end showing a central orifice which admitted the tip of the index finger. This was apparently an invagination. On histological examination of the hard head of the invagination a diagnosis of cylindrical epithelioma of the large intestine with ulcerations of the mucosa and a subacute inflammatory reaction was made. Resection was decided upon, but was not done as the patient's condition rapidly became worse and death resulted three weeks after the first operation

In the discussion of this case, HAUTEFORT stated that in his opinion the cancer was situated only in the sigmoid, and that if Laurent had resected the invaginated portion of the intestine as soon as he discovered the invagination he would have prevented infection which without doubt was a factor in the patient's death. As the second stage operation, Laurent had planned complete evisceration of the invaginated loop by section of its upper end as close as possible to the artificial anus and section of the rectum at the level of the head of the invagination. Hautefort believes it would have been wiser, after section of the upper end of the loop, to tie and section the vessels belonging to the invaginated portion and at the same time remove suspicious glands, then, to resect the lower end immediately below the groove of intussusception where the lower end began to form the sleeve of the invagination, and finally, after closure of the liberated invagination from above and of the upper extremity of the sleeve, to slip the former down and extract it through the anus

The operative procedures indicated after iliac colectomy in invagination of the large intestine were formulated by Hautefort as follows

1 For a short and entirely sigmoid invagination with a sufficiently long sigmoid loop and the head of the invagination at a sufficient distance from the pouch of Douglas, simple colectomy with termino-terminal anastomosis and subsequent closure of the iliac anus

2 For invagination which is entirely sigmoid, but in a short loop, colectomy with closure of the iliac and sigmoidorectal ends and permanent conservation of the artificial anus. This is the Hartmann procedure. When the head of the invagination

extends to the pouch of Douglas, sufficient healthy intestine for the Hartmann procedure can be obtained by incising the peritoneum around the rectum

3 For sigmoidorectal invagination abdomino perineal amputation according to the Quenu technique if the patient's condition will permit this operation. If the patient's condition requires a quick operation as in Laurent's case, a procedure analogous to that previously mentioned should be employed

PAGE

## LIVER, GALL BLADDER, PANCREAS, AND SPLEEN

Winkenwerder W L A Study of Resorption from the Biliary Tract with Especial Reference to the Morphology and Permeability of the Cystic Epithelium *Bull Johns Hopkins Hosp*, Balt 1930 xli: 172

The author rather extensively reviews the work of earlier writers on the resorption of water, particulate matter cholesterol and neutral fat by the epithelial cells of the gall bladder wall and bile ducts

In experiments which the author carried out on cats the duodenum was incised opposite the ampulla of Vater and a catheter inserted and pushed up the common duct until its tip entered the cystic duct. The bile was then expressed from the gall bladder the viscus irrigated with warm Locke solution, and a solution composed of equal parts of a 1½ per cent solution of potassium ferrocyanide and ferric ammonium citrate injected through the catheter until the gall bladder was moderately filled. The catheter was then withdrawn and the duodenum and abdominal walls were closed. Necropsies were performed from eight to eighty minutes after the operation and the biliary apparatus fixed in formalin

Sections of various parts of the gall bladder wall showed that in every instance the ferrocyanide citrate solution had passed through the mucous membrane of the gall bladder and bile ducts. Apparently the Prussian blue passed into the veins of the subserous layer. Precipitated granules in the lymphatic system were observed only rarely. The average time of the absorption of Prussian blue through the gall bladder wall was between ten and thirty minutes. The author believes that the absorption of the experimental salts began immediately after their introduction into the gall bladder and that this passage during the first hour was physiologically normal

When the ferrocyanide citrate solution was injected into the hepatic ducts a similar but less marked absorption of the dye was evident in the epithelial cells. No dye was found in the hepatic lobules. The author believes there are two types of epithelial cells a slender readily permeable cell, and a typical columnar cell. The latter is less permeable than the former. The highly permeable cells were not found in sections of the bile ducts

STANLEY H MENTZER M D

Walters W, Greene C H, and Frederickson C H The Composition of the Bile Following the Relief of Biliary Obstruction *Ann Surg*, 1930, xci, 686

In an attempt to elucidate some of the changes observed in the character of the bile after the establishment of biliary drainage for the relief of biliary obstruction, the authors made a detailed study of the volume and composition of the bile in a series of surgical cases. They report a series of cases to show the effect of biliary obstruction in man. The total daily output seemed to be more or less constant and not affected by the other factors studied but the concentration varied inversely with the volume of the bile

Biliary obstruction inhibits or stops the formation of bile acids. If the liver is not too greatly injured there is a relatively rapid return to normal. The concentration of urea in the bile varies directly with the concentration of urea in the blood. The concentration of chlorides in the bile is slightly greater than the chloride content of the blood serum. With cholerrhagia the resultant loss of salts becomes so great as to be of clinical significance and the loss of fluids may be so great as to cause a diminution in the output of urine

Zeno A, Cld, J M, and Carnes O Cystadenoma of the Liver (Cystadénome du foie) *Bull et mém Soc nat de chir*, 1930 lvi, 416

The authors report three cases of cystadenoma of the liver

The first was that of a woman thirty nine years old who for three years, had experienced a sensation of weight in the epigastric region after eating and was suddenly seized with pain in the right hypochondrium which radiated to the right flank and shoulder. The pain lasted for several hours and then ceased spontaneously. In addition, the patient had had several attacks of diarrhoea. Soon after these attacks she discovered a small tumefaction in the epigastric region which progressively enlarged. Later, the crises of pain recurred and were sometimes accompanied by foetid eructations. The appetite remained normal, and there was no loss of weight

Operation revealed a cyst which formed part of the lower surface of the liver and extended five finger breadths beyond the anterior border of the organ. From this cyst 4 liters of an odorless greenish fluid were aspirated. A second cyst, the size of a large nut was then found between the wall of the first cyst and the rest of the anterior edge of the liver. The contents of the smaller cyst resembled the white of an egg. After resection of the lower wall of the smaller cyst and of as much as possible of the wall of the larger cyst, the remainder of the wall of the larger cyst was sutured to the base of the cyst and marsupialized by fixing it to the aponeurosis

The operation was followed by fever of 38.5 degrees C, but this subsided on the third day. There was no pain, and no drainage occurred from the wound. Digestion and bowel movements were nor

mal The patient left the hospital on the twenty-first day after the operation

The second case was that of a man sixty-four years of age who, for about twenty years, had suffered occasional attacks of intermittent pain in the right flank accompanied by bilious vomiting During the last five years these attacks had practically ceased, but the patient had noticed an increase in the size of his abdomen

Operation disclosed a smooth, pink, fluctuating tumor the size of an adult's head on the lower surface of the liver, external to the gall bladder, and a bluish-white fluctuating tumor 6 cm in diameter arising from the convex surface of the gland Thirty cubic centimeters of greenish fluid were removed by puncture from the smaller cyst and the anterior wall of this cyst was completely resected A tumor the size of a pigeon's egg was then found in the angle formed by the lower surface of the liver and the base of the largest cyst This was completely resected Eight liters of bloody fluid were then removed by puncture from the large cyst and the cyst was marsupialized

After the operation abundant drainage occurred from the wound for a few days, but gradually ceased Two months after the operation the patient died from streptococcal purulent pleurisy

The third case was that of a woman thirty-three years of age who had had nine pregnancies One month after her last delivery she noted a painless tumor in the right hypochondrium which gradually increased in size A year later she began to suffer from pain in the lumbar region, palpitations, and fatigue There were no digestive disturbances

Operation disclosed a bluish fluctuating tumor on the lower surface of the right lobe of the liver On aspiration of the cyst, 600 c cm of slightly bloody fluid were withdrawn Enucleation of the cyst, which was accomplished easily, was followed by uneventful convalescence The patient left the hospital on the eighteenth day

The report of these cases is followed by a discussion of the frequency of cystadenoma of the liver, the symptoms, the differential diagnosis, especially from hydatid cyst, the pathogenesis, and the treatment

FLORENCE A CARPENTER

Nickel, A C, and Judd, E S Cholecystitis A Bacteriological and Experimental Study of 300 Surgically Resected Gall Bladders *Surg, Gynec & Obst*, 1930, 1, 635

Viable bacteria have been isolated by different investigators from surgically resected gall bladders that had been the site of cholecystitis These bacteria produce lesions of the gall bladder when injected into animals At the Mayo Clinic, cultures were made from 300 gall bladders with Rosenow's technique and in some instances Wilkie's modification There was a potential focus of infection in 85 per cent of the patients

The authors conclude that the majority of gall bladders surgically resected from patients with

acute or subacute cholecystitis contain pathogenic bacteria The organisms isolated are green producing streptococci, gram negative bacilli, and staphylococci The gall bladders resected from patients with chronic cholecystitis are sterile Cultures from "strawberry" gall bladders are usually sterile unless there is a complicating factor Streptococci isolated from grossly diseased gall bladders are of etiological significance since they produce cholecystitis and cholelithiasis when used experimentally The colon bacillus may also affect the gall bladder and may be found with the streptococcus in relatively acute cases and cases in which there are stones in the common duct Staphylococci also are encountered, but they are non pathogenic for the gall bladders of rabbits when injected in pure culture

Stanton E MacD Immediate Causes of Death Following Operations on the Gall Bladder and Ducts *Am J Surg*, 1930, viii, 1026

The author has analyzed the immediate causes of death in 500 cases in which surgery of the biliary tract was done About 30 per cent of the deaths were due directly to the biliary disease The biliary conditions included gall-bladder perforation, hepatic insufficiency, liver abscesses, and cholelithiasis Peritonitis accounted for 15 per cent of the deaths, shock and hemorrhage for 11 per cent, cholelithiasis for 7 per cent, pulmonary embolism for 6.6 per cent, perforations of the gall bladder and bile ducts for 6.5 per cent, pneumonia for 10 per cent, cardiac conditions for 6.5 per cent, renal complications for 5 per cent, hepatic insufficiency for 4.5 per cent, metastatic abscesses for 3 per cent, gastric dilatation, protracted vomiting, and intestinal obstruction for 3 per cent, and acute pancreatitis for 1.25 per cent Twenty deaths (3 per cent of the total number) are listed as "high temperature deaths" The author discusses these in detail Their cause is unknown The fever often reached 106 degrees F, and death ensued within from thirty six to forty-eight hours after the operation Stanton believes such deaths are "liver fatalities" and are probably as definitely associated with biliary surgery as post-operative hyperthyroidism is associated with goiter surgery The clinical picture is that of an overwhelming toxæmia

Bile peritonitis as distinguished from septic peritonitis accounted for approximately 15 per cent of the total number of deaths from peritonitis

STANLEY H MENTZER, M D

Mosto, D The Presence of Ganglion Cells in the Islands of Langerhans (Acerca de la existencia de células ganglionares en los islotes del páncreas) *Arch argent de enferm d apar digest*, 1930, 1, 535

The nerves of the pancreas are divided into vasomotor and secretory nerves The first include vasodilators and vasoconstrictors, and the second, nerves governing internal secretion and nerves governing external secretion Entering the pancreas from the solar plexus, the nerve filaments

follow the ramifications of the pancreatic blood. The fibrillæ end in the small blood vessels or the glandular elements. The fibrillæ are myelomic and amyelomic. The amyelomic fibrillæ are of three types: (1) those for the glandular acini, (2) those for the islands of Langerhans, and (3) those distributed in the small blood vessels. The myelomic fibers are of two kinds: (1) finer ones branching into the microsympathetic intrapancreatic ganglia which come from the pneumogastric and (2) larger ones branching along the walls of the blood vessels which represent the afferent nerves.

Besides these there are ganghonic cells in the perilobular tissue. The visceral ganghonic cells are found around the acini. Their prolongations end on one side in the perilobular plexus and on the other in the acini. The function of these perinsular ganglia is to establish a connection with the fibers destined for the pancreatic islands. Sympathetic ganghonic cells have never been found in the islands of Langerhans.

The author reports a case of pancreatic lithiasis associated with diabetes and complete obstruction of the excretory duct of the pancreas in which numerous ganghonic cells in the islands of Langerhans persisted after disappearance of the exocrine acini. Ganglia of several sizes were found principally along the nerve filaments. The nucleus was round and

presented a thick nucleolus. Nerve cells were discovered not only in the nerves, but also free in the myxomatous tissue and around and in the islands of Langerhans.

RAOUL DE LA GARZA, M.D.

#### MISCELLANEOUS

##### Cope V Z. The Localization of Abdominal Pain. *Brit M J*, 1930, 1: 895

Abdominal pain is of two main types: (1) pain due to a pathological stimulus in a part of the body other than the abdomen, and (2) pain due to a stimulus within the abdominal cavity. The localization of pain of the first type is not very difficult if the possibility of a remote source is borne in mind.

Most acute abdominal pains may be classified in one of two groups: those due to obstruction of a tube or the outlet of a hollow viscus and those due to inflammation of a viscus with or without involvement of the peritoneum. Both varieties are localized by the same aids, but the importance of the various aids varies greatly in the two types. These aids are: (1) spontaneous local pain, (2) tenderness evoked local pain, (3) superficial hypersensitiveness, (4) pain felt at a distance referred pain, (5) pain in contiguous viscera, (6) the shifting of pain, and (7) the clinical history. Cope discusses these aids in detail.

SAMUEL KAHN, M.D.

# GYNECOLOGY

## UTERUS

Vanverts, J. The Procedure To Be Followed in Case of Perforation of the Uterus (*De la conduite à tenir en cas de perforation de l'utérus*) *Bull Soc d'obst et de gynec de Par*, 1930, xix, 255

In maneuvering to produce an abortion a midwife introduced a sound into the uterus on two consecutive days. On the third day, the fetus was expelled. On the fourth day, the temperature rose to 39.7 degrees C. Curettage was then done and a portion of the placenta removed under chloroform anesthesia. The abdomen was slightly distended, especially in the epigastric region. Abdominal palpation was painless, but on vaginal palpation the body of the uterus was found to be sensitive. The lochia was normal. The patient was given subcutaneous injections of sulpharsenol. On the seventh day her general condition was worse. Vaginal hysterectomy was then done. Examination of the removed uterus revealed a perforation to which the omentum had been adherent. The patient died the next morning. The author is of the opinion that the perforation was caused by the midwife as the distention of the abdomen followed the efforts to produce abortion. He believes that the operation should have been performed earlier. Faure says that in infection following abortion, curettage to remove placental debris should be followed by vaginal hysterectomy after twenty-four hours if no improvement is noted in the general condition, the chills and fever persist, and the pulse remains rapid at the end of that time.

In other cases of perforation of the uterus seen by Vanverts the perforation was recognized when it was produced.

The prognosis and the therapeutic indications vary with the circumstances under which the perforation occurs. A perforation due to attempted abortion is always serious and when recognized demands radical operation. When the perforation is caused by a surgeon in the course of an intra-uterine maneuver, conditions are different and the course to be followed varies in different cases. If, as in one case coming to Vanverts, the surgeon continued the curettage after having attempted to discover the site of the perforation with a sound, or if, as in another case seen by Vanverts, the surgeon, fearing that he had perforated the uterus, introduced a sound through the orifice and directed it about in the peritoneal cavity, immediate hysterectomy is necessary. Vanverts operated by the abdominal route in the two cases cited, but believes that as a rule the vaginal route is preferable. Immediate hysterectomy is indicated also when the curettage causing the perforation was followed by

an intra-uterine injection or the perforation occurred during a curettage for placental retention associated with infection. When the uterus is perforated in the course of curettage for placental retention without infection and the surgeon stops the curettage as soon as the accident occurs, the prognosis is more favorable. Under such circumstances treatment by absolute rest, the application of ice to the abdomen and ordinary measures for maintaining the general condition, may be followed by recovery, but at the least sign of peritoneal infection the uterus should be removed.

In the discussion, GAUDIER reported four cases. In the first, the uterus was perforated by an interne in the course of curettage undertaken because of complications of abortion. At laparotomy, an epiploic tag was placed over the uterine wound after thorough cleansing of the region. The wound healed and the patient recovered. In the second case—also a case of perforation occurring in the course of curettage—treatment by the application of ice to the abdomen was followed by recovery. The third and fourth cases were those of women entering the hospital in very poor condition after the perforation. Laparotomy was done in both. In one, death followed, but in the other recovery resulted in spite of an enormous peritoneal venous thrombosis.

BUE stated that hysterectomy is indicated in every case of induced abortion complicated by marked infection and a peritoneal reaction whether perforation is recognized or not. PAGE

Krels, J., and Rigaut, J. Connective Tissue Lesions, Particularly of the Collagenic Framework of the Endometrium in Cases of "Functional" Menorrhagia and Metrorrhagia. Anatomical and Clinical Research on Heredodysplastic Etiology (*Les lésions conjonctives en particulier du grillage collagène de l'endomètre dans les cas de ménorrhagies et de métrorrhagies fonctionnelles*). *Recherches anatomiques et cliniques de l'étiologie hérédodysplastique*. *Gynec et obst*, 1930, xxi, 324.

After a brief review of the literature, the authors discuss the anatomical condition of the glands and connective tissue of the uterine mucosa in normal and abnormal menstruation. Their discussion of pathological menstruation is based on a study of the connective tissue element of the endometrium in thirty cases of metrorrhagia of young girls and adult women. From the anatomopathological point of view, the glands in such cases may be divided in two groups: those with, and those without, hyperplasia.

The authors' study was limited to the interpretation of the mechanism of the hemorrhage according to the lesions of the endometrium involving the cells and the intercellular fibrillary framework.

These lesions and the associated hemorrhage are not due to an ovarian cause. They represent a condition peculiar to the uterine mucosa which manifests itself on the occasion of ovarian function. Necrosis of the cells and framework fibers, which is observed in all cases—those of young girls as well as those of women between twenty five and forty five years of age—is to be attributed to a productive impotence of the connective tissue of the uterus which, in the young girl, is primary and in the older woman is due to early functional exhaustion. Independent of the menstrual cycle, the mucosa shows necroses and late regenerations of the cells of the stroma and of the collagenic fibers distributed in strands on the interior of the endometrium. Under the influence of the ovary, the mucosa evolves toward the pre-gravidic stage without being disturbed by the necroses it harbors. When the congestive attack or menstruation comes on, it is insidiously prepared for desquamation, the mechanism of which is disturbed by the premature interstitial hemorrhage at the sites of the necrosis or regeneration. Both sites lack vascular sheaths and in general a normal fibrillary structure. Thus the vicious circle continues from menstruation to menstruation. The same phenomena are repeated whether there is glandular hyperplasia or not.

The intensity, duration and type of the uterine hemorrhage depend upon the duration and intensity of the congestive attack in the endometrium and the ability of the connective tissue element to regenerate.

The congestion may be of genital origin (ovary tumor) or extragenital origin (hypertension, constipation, coitus).

In a large number of cases of metrorrhagia there is a history of previous menstrual abnormalities, particularly polymenorrhœa at the time of puberty, and other signs which point to congenital syphilis.

The cure of the metrorrhagia after anti syphilis treatment suggests that the connective tissue lesions were due to congenital syphilis.

The authors report a case in which curettage was done twice before and once after treatment and anatomical and clinical cure has now lasted for a year.

PAGE

Keller R. and Bohler, E. A Statistical and Comparative Study of Myomectomy (*Étude statistique et comparative sur la myomectomie*). *Rev. franc. de gynéc. et d'obst.*, 1930, xxv, 177.

The immediate and remote results of conservative and radical operations for uterine fibroma are compared. The mortality of conservative abdominal operations is at present practically equal to that of subtotal amputation and markedly lower than that of total hysterectomy. It must be remembered however that all statistics which are not detailed may include a large number of cases of subserous pedicled fibromata and even cases of fibromata with a broader base of insertion the ablation of which, nearly always simple, could not be characterized as enucleation because it does not include all of the

risks of that procedure. The term 'enucleation' should be applied only to the ablation of tumors of clearly interstitial development.

The mortality of the conservative vaginal operation is less than that of total vaginal hysterectomy. It is probable, however, that statistics for this procedure also include easily accessible pedicled tumors.

Radical operation relieves the disease symptoms very satisfactorily. The statistics of 7 gynecologists for 900 cases show that after the operation complaints are rare and from 90 to 98 per cent of the women regain their normal efficiency. The metrorrhagia always ceases. Pronounced disturbances of the surgical menopause occur in from 6 to 15 per cent of the cases and slight and fleeting menopausal disturbances in from 12 to 23 per cent. The incidence of recurrence is practically zero.

After the conservative operation the frequency of recurrence is higher. Of 3,061 myomectomies, 10 per cent were followed by recurrence. Metrorrhagia frequently persists. Bonney is the only surgeon to report its cessation in all cases. Of the cases of Mandelstamm and Murray it persisted in from 1 to 2 per cent. Statistics of 4 other surgeons, based on 400 cases, showed persistence of metrorrhagia in from 25 to 80 per cent. Excluding metrorrhagia the remote results of the conservative operation are far from constantly good.

After myomectomy, pregnancy is relatively frequent. Of 2,143 myomectomies, 224 were followed by pregnancy. The statistics are often incomplete and rarely give the number of abortions. Judging from the number mentioned, abortions are not frequent.

The authors collected from the literature 431 cases in which myomectomy was done in the course of pregnancy. In 43 it was done for pedicled fibromata without torsion, in 27 for pedicled fibromata with torsion, in 19, for intraligamentous and retrovesical fibromata, in 83 for interstitial fibromata, and in 220 for unclassified fibromata. The total maternal mortality was 2.5 per cent. In 41 per cent of the cases the operation was performed during the first half of the pregnancy. In the reports of the other cases the time at which it was done is not stated. In 10.7 per cent, interruption of the pregnancy occurred. In the reports of 48.5 per cent of the cases the statement is made that the pregnancy went to term, whereas in the reports of 29.4 per cent it is stated merely that the pregnancy continued. Of 32 abortions the time of which is recorded, 16 occurred about the sixteenth day after operation.

The indication for operation was mentioned in 108 case reports. Several of the operations were undertaken with an erroneous diagnosis. The most frequent indications were violent pains, phenomena of compression, and a rapid increase in the size of the tumor. In some cases the tolerance of the uterus seemed very great. The application of forceps in labor was doubtless more frequent after myomectomy because of the fear of uterine rupture. This danger seems to be insignificant.

PAGE

Montel, G. Some Histological Data Concerning Chronic Cervicitis and Precancerous Conditions of the Cervix (Données histologiques sur la cervicite chronique et les états précancéreux du col) *Rev. franç. de gynéc. et d'obst.*, 1930, xxv, 269

Studies of chronic cervicitis have convinced Montel that this condition is the precursor of cervical cancer, the microscopic appearance indicating a sequence of changes beginning with simple inflammatory glandular hyperplasia and ending in a benign adenoma capable of malignant transformation. The inflammatory conditions of the cervix have their origin for the most part in obstetrical traumata and account for the greater frequency of cervical carcinoma in the multipara than the primipara.

Montel distinguishes three types of chronic cervicitis: (1) the simple type, (2) the hyperplastic type and (3) diffuse adenopapilloma of the cervix (of inflammatory origin). These three types represent progressive stages of glandular hyperplasia, and the third is capable of malignant transformation. An important finding in all types is the frequent occurrence of ulcerations which result in destruction of the epithelium and exposure of the underlying cervical glands and blood vessels.

Associated with these purely inflammatory processes, the author frequently discovers groups of atypical cells in the superficial epithelium which he considers precancerous. He describes these cells as being larger than those of the normal epithelium and as having nuclei characterized by striking mitotic figures. The fact that the basal layer is intact proves to Montel that cancer originates in the topmost layers rather than, as claimed by Schiller, in the basal cell layer. A photomicrograph showing this "precancerous state" reveals a stratified squamous epithelium which is apparently normal except for active mitosis of the nuclei and marked vacuolization in the cytoplasm of the cells of the superficial layers. The underlying stroma shows round cell infiltration and dilated capillaries.

Because of the danger of malignant degeneration in chronic inflammation of the cervix, the author recommends active treatment to remove all areas of infection from the cervix. HAROLD C. MACK, M.D.

Sturgis, M. C. The End-Results in Ten Cases of Hydatidiform Mole Treated by Curettage. *Am. J. Obst. & Gynec.*, 1930, xix, 641.

The incidence of hydatidiform mole is 1.1 per cent. Of the patients whose cases are reviewed by the author, 5 were between twenty and thirty years of age, 4 were between thirty and forty years, and 1 was forty-four years old. All except 1 were white. The 1 exception was a negroess. Seven were American born. One was an Italian and 1 an Austrian. Seven of the women were multigravidae. All of them presented some degree of sapraemia at the time of their admission to the hospital, and in the fatal case there was sepsis.

The treatment consisted in curettage with a final digital examination to be sure the uterus was clean.

Five of the women had 1 or more normal pregnancies after the curettage, and 3 others were well and capable of childbearing.

The conclusions drawn are as follows:

1 Hydatidiform mole occurs much more frequently than it is recorded.

2 The most serious complications are infection and hemorrhage.

3 Delay of treatment increases the mortality and morbidity.

4 Chorionepithelioma is a comparatively rare sequence.

5 Careful curettage is safe treatment for hydatidiform mole, especially in the young woman who still desires to bear children.

In the discussion, ANSPACH reported 2 cases. In 1, he performed a hysterotomy and removed an ovary. Two months later irregular bleeding began and a definitely palpable tumor slowly developed in the anterior wall of the uterus on the right side. A diagnosis of chorionepithelioma being made, complete hysterectomy was done. In the second case, 50 mgm. of radium were applied in the uterus for twelve hours as the scrapings showed cells suggesting a tendency toward malignant change. There were no further symptoms. Two years later the patient gave birth to a normal full term child who subsequently grew to healthy manhood.

WELDEN reported that in the last five years he has seen 5 cases. All of the patients were very toxic and lost weight rapidly. One patient had gone down from 150 to 95 lb. in three months, but within four months after curettage she regained all she had lost. She was the only one who became pregnant. The baby had a large spina bifida.

LONGAKER reported 6 cases. He performs a curettage immediately and another a month later. The scrapings are carefully studied microscopically. In none of his cases has chorionepithelioma developed.

LAWRENCE saw 4 cases in 2,000 patients. In 1 instance the condition occurred twice in the same woman.

TRACY has seen 3 cases. One patient returned two months later with uterine bleeding. According to 2 pathologists, the scrapings showed chorionepithelioma. The patient refused operation and fifteen years later is still in excellent health.

MAZER reported that 13 women treated for hydatidiform mole during the past twelve years are well. One of them developed 2 huge theca lutein cysts which produced pressure symptoms requiring their removal. E. L. CORNELL, M.D.

Moulounguet, P., and Dobkevitch, S. Uterine Sarcoma (Les sarcomes de l'utérus). *Gynéc. et obst.*, 1930, xxi, 204.

The authors report briefly nineteen uterine sarcomata, and classify these tumors as follows:

1 Sarcoma of the uterine body. Undifferentiated sarcoma, lymphadenoma, malignant leiomyoma, and fibromyoma (questionable malignancy).



2 Sarcoma of the cervix malignant leiomyoma, and adenosarcoma

They describe briefly the salient histological features of each type. They are of the opinion that a diagnosis can be made only by microscopic examination of the tissue.

The group of cases reported by them offers very little information of clinical value as the outcome in ten cases could not be determined. Five patients died as a result of the operation or from recurrence shortly after it. Of the four who remain alive and well only one has survived more than four years.

The authors advise surgery only for early cases believing that irradiation offers the best prognosis when the process has extended beyond the uterus.

HAROLD C. MACK, MD

#### ADNEXAL AND PERIUTERINE CONDITIONS

Denton J and Dalldorf G. Pseudotuberculous Salpingitis. *Surg Gynec & Obst* 1930 1 663

Denton and Dalldorf discuss a foreign body type of inflammatory process in the oviduct which simulates tuberculosis histologically and which they believe has frequently been confused with tuberculosis of the oviduct. Their attention was attracted to the disease by the observation in three cases of large irregular ring like masses of a foreign substance in sections of oviduct which though much enlarged and patently diseased had some gross features of tuberculosis. The histological findings in these cases showed clearly that the foreign material was not a residuum of caseation. It was enclosed in the bodies of giant cells and there was usually an associated granulomatous reaction with extensive endothelial hyperplasia, tubercle like focal lesions and in some instances anemic necrosis. It was suggested that the foreign substance might be the shells of dead parasites but this was proved incorrect. Thirty four specimens containing it were found in a total of seventy eight cases in which a diagnosis of tuberculous salpingitis had been made.

On microscopic examination the lesions were found limited to the serous and mucous coats. The lesions of the serous coats were of two types: small tubercle like nodules which formed in or about subserous lymphatics and simple granulation tissue. In the mucous membrane the most common lesions were the small giant cell and endothelial nodules. Particles of foreign material were found in approximately half of these nodules.

The patients showed no clinical evidence of tuberculosis in other organs. They were in general well nourished and in good health.

Laboratory study of the foreign material showed it to consist of calcium and magnesium phosphate in crystalline form. The view that this foreign substance is not a natural product of a tuberculous inflammatory process is supported by the fact that it is absent in the more typically tuberculous lesions.

The authors suggest that the lesions described may be due to persistence in the oviduct in the form

of crystalline material of pathological metabolites produced during an inflammatory reaction. This theory offers an explanation of the benign character of the disease.

HARRY W. FINE, MD

Masson J G and Hamrick R A. Pseudomucinous Cystadenoma. An Analysis of Thirty Cases in Which the Cysts Were Not Ruptured Before Operation. *Surg Gynec & Obst* 1930 1 752

Ovarian pseudomucinous cystadenomata constitute a large proportion of the ovarian cysts with which the surgeon has to deal. They may be unilocular or multilocular. Their course is slow. They frequently grow to a large size.

Thirty cases of pseudomucinous cystadenoma of the ovary were analyzed at the Mayo Clinic. The average age of the patients was forty eight and seven tenth years. In twenty two of the cases the tumors were benign; in eight, there was evidence of a malignant condition. The most common symptoms were swelling of the abdomen and pain with a gradual onset. The right and left ovaries were involved alone with about equal frequency. Papillomata were visible to gross inspection in all of the malignant cysts.

The prognosis is good but recurrence may take place. The removal of both ovaries is indicated when the woman is past the menopause and when the condition is malignant. When the condition is malignant, the postoperative use of roentgen rays and radium is indicated.

#### MISCELLANEOUS

Minamikawa K. An Experimental Investigation of the Effect of the Nervous System on the Function of the Genital Organs. *Jap J Obst & Gynec* 1930, VIII 157

In experiments on rabbits the author studied the effect of the excision of 1 cm of the sympathetic nerves surrounding the hypogastric artery on the subsequent development of the uterus and ovaries. At varying intervals after the unilateral sympathetomy the ovaries and uterus were removed and studied histologically. It was found that on the side operated upon the uterus increased in weight and size within two weeks and the ovary within one month after the operation. Histological examination revealed definite hyperplastic changes in both organs.

The author studied also the effect of unilateral hypogastric sympathectomy on the uterus of rabbits when bilateral oophorectomy was performed simultaneously. He found that under these circumstances the atrophy of the ovaries was prevented to some extent.

LEOPOLD GOLDSTEIN, MD

Gram H G. A Symptom Triad of the Postclimacteric Period. *Ada med Scand*, 1930 LVIII 139

The author discusses the obesity associated with tender subcutaneous infiltrations, deforming arthritis of the knee joint, and arterial hypertension which

frequently occurs in women at the age of the menopause and older. The subjective symptoms are vague rheumatic pains, pain in the knees, breathlessness, and palpitations.

Women who have borne many children seem especially predisposed to the condition.

The description of the syndrome is supplemented by sixty nine case histories. A study of all of the cases seen in a period of three and three fourths years indicates that "formes frustes" of the syndrome with only two of the cardinal symptoms may occur, but that very often these show the fully developed triad of symptoms later.

**Serdukoff, M. G.** The Part Played by Intra Uterine Injections in Gynecology (*Le rôle des injections intra utérines dans la pathologie de la femme*) *Gynécologie*, 1930, xvii, 140.

Serdukoff is of the opinion that intra uterine injections in the form of irrigations may prove very effective in certain localized disorders of the endometrium of the hyperplastic type. He emphasizes, however, that this treatment is definitely contra indicated by acute pelvic inflammation, genital hypoplasia, scanty menstruation, and instability of the nervous system, and that even when all precautions are taken and the best technique is used, such injections may result in degeneration and subsequent atrophy of the uterine and tubal mucosa and may permanently disturb the biochemistry of the cells and their secretions.

The use of intra uterine injections for the purpose of preventing conception in healthy women may result in inflammatory changes in the uterine and tubal mucosa, favor infection, impair the motor function of the tubes, and result in damage to the ovum leading to abnormal implantation. The iodine solutions commonly injected for this purpose may cause disturbances in the menstrual cycle, alterations of internal secretion, and permanent sterility in addition to toxic effects from the iodine. Intra uterine injections may be beneficial in conservative gynecological therapy, but when used for contraception endanger health.

HAROLD C. MACK, M.D.

**Bertin, E., and Schulmann, E.** Syphilitic Sterility (*La stérilité syphilitique*) *Presse méd.*, Par, 1930, xxviii, 585.

It is believed by the majority of syphilologists that acquired or hereditary syphilis may cause sterility. Of 78 couples with known acquired or inherited syphilis which were investigated by Perin, 36 were absolutely sterile. In the cases of 8, the sterility was apparently voluntary, and in the cases of 3 it was evidently due to a genital lesion. In the cases of 25 it could be explained only by the syphilis. The incidence of sterility in these cases was therefore 32 per cent, whereas the average incidence of sterility is 15 per cent.

Of 110 syphilitic couples investigated by the authors, 54 were sterile, and in the cases of 39 of the latter no other cause for the sterility than the syphilis could be found.

In the cases of couples involuntarily sterile who were not known to have syphilis and were free from genital lesions which might account for the sterility, Perin found the incidence of syphilis to be 30 per cent. In this series hereditary syphilis was twice as frequent as acquired syphilis. Perin emphasized that as inherited syphilis may remain latent, we are not justified in denying the presence of syphilis *a priori* in all cases without clinical or serological signs of the condition.

In the case of the male, a careful examination of the sperm is necessary to exclude syphilis as a cause of sterility. Variations in structure and motility of the spermatozoa may result from pathological changes in the testis.

The problem in the case of the female is more complex and may be bound up with other manifestations of syphilis such as abortion, premature labor, and stillbirth. Luetic lesions of the uterus and tubes are well understood, but ovarian syphilis cannot be so readily admitted. If present it occurs most often as sclerosis with adhesions. Occasionally, no anatomical basis can be found for sterility in the female. In such cases a Wassermann test should be performed. In some of them it may reveal latent syphilis which will respond favorably to treatment. Sterility due to endocrine disturbances may at times be a manifestation of luetic affection of the endocrine glands.

The prognosis of sterility due to syphilis must be quite guarded as the chance for a successful result is not great even when careful and thorough treatment is given. The authors report three successful results among twenty five cases treated during the past five years.

**Donaldson, M., Lynham, J. E. A., Dodd, S., Reynolds, R., and Others.** Discussion on the Position of Radium in the Treatment of Gynecological Conditions. *Proc. Roy. Soc. Med.*, Lond., 1930, xxiii, 1055.

DONALDSON is convinced that when radium treatment has been properly worked out it will prove to be the greatest advance ever made in the treatment of malignant disease. He states that while our present knowledge of the action of radium is still very imperfect, it has been definitely proved that quickly growing cells are far more affected by radium than more stable cells. The direct action of radium is evidenced by the cessation of mitosis in tissue cultures exposed to radium irradiation. Radiosensitivity is of great importance but little is known regarding the difference in the radiosensitivity of quickly growing cells and more stable cells or regarding the causes of the difference in radiosensitivity of different tumors. These problems are for the biochemists and physicists.

Other problems which need further study are wave lengths, the relation of sepsis to the results of radium irradiation, the effects of split doses and repeated small doses, and the technique of radium therapy.

Donaldson describes the use of radium in carcinoma of the cervix and the body of the uterus, the vagina, and the vulva, chorionepithelioma, sarcoma of the cervix, and benign uterine conditions.

LYNHAM states that radium treatment of such conditions as fibroid disease of the uterus, climacteric hæmorrhage, and uncomplicated endocervicitis is easily carried out by the gynecologist and can be relied upon with considerable certainty to give relief. If radium irradiation is contra indicated or radium is not available, the patient may be referred for treatment with the X rays.

The best results are obtained from the use of radium for its immediate local effect followed by X ray treatment begun before the radium reaction has entirely subsided. Lynham briefly reviews the history of the treatment of malignant disease of the cervix with radium.

He believes that the best results will follow a system of treatment which is extended over a period of months or years after the first manifestation of the disease. He emphasizes that one aspect of the treatment which has not received the attention it deserves is the preparation of the patient before the use of radium. Infective conditions must be treated

to reduce toxæmia and bring the blood to normal before the irradiation is begun. Infected sinuses and teeth are sometimes responsible for failure.

DONO cites as a very common type of case in which radium is of value the case of the parous woman with subinvolution and the woman approaching the menopause who has periods of serious hæmorrhage. He believes that radium therapy has a definite use also in the cases of women with pulmonary tuberculosis who cannot afford the monthly loss of blood, and that it is warranted in cases of intractable dysmenorrhœa which is not relieved by other measures.

REYNOLDS says that radium treatment cannot be dissociated from X ray therapy. Too large a dose of either is injurious. If the dose is split a greater total dose of irradiation is possible and the result is better.

LEVITT believes that the application of X rays may be considered complementary to the application of radium. In the use of the X rays, which are applied externally, the zone of maximum intensity is at the periphery of the growth, whereas in the local application of radium the zone of maximum intensity is at the center. HARRY M. NELSON, M.D.

# OBSTETRICS

## PREGNANCY AND ITS COMPLICATIONS

Windfeld, P. Determinations of the Pulse Volume and the Respiratory Metabolism During Pregnancy (*Minutenvolumen- und respiratorische Stoffwechselbestimmungen während der Gravidität*) *Acta obst et gynec Scand*, 1930, 7, 182

The pulse volume increases during pregnancy and returns slowly to normal after delivery. The increase begins early in pregnancy and judging from the relatively slight oxygen consumption, is greater than is required by the rise in the oxygen consumption. The blood pressure does not change.

The increase in the pulse volume is probably due, not only to the increase in the metabolism, but also to other factors such as changes in the quantity and viscosity of the blood.

After the thirtieth week of pregnancy there is a steady and considerable increase in the metabolism, the calorie consumption per hour and kilogram becoming about 25 per cent higher than at the beginning of the pregnancy. The increase in the metabolism probably occurs in the mother as there is no evidence that the metabolism of the fetus is greater than that of the mother.

After delivery, the metabolism of the nursing mother slowly decreases unless there is a rapid increase in weight, when it may remain unchanged.

There is no evidence that the respiratory volume is increased or that the ventilation of the lungs is much greater during pregnancy than in the non-pregnant state.

D'Erchia, F. Reactive Neoformations Resulting from Anatomical and Functional Insufficiency of the Human Placenta (*Neoformazioni reattive da scompenso anatomico e funzionale della placenta umana*) *Riv ital di gynec*, 1930, 11, 1

After thorough gross and histological studies of numerous placenta and an exhaustive review of the literature on placenta marginata, placenta circumvallata, and placenta accreta, the author concludes that, with few exceptions, the phenomena of proliferation of the placenta are due to the organic forces which attempt to re-establish the equilibrium between the mother and the fetus. He regards them as a manifestation of the needs of the two organisms in symbiosis to re-activate their material exchange when the efficiency of the placenta is impaired as the result of anatomical and functional insufficiency of a healthy but atrophic placenta, a diseased placenta, or a placenta deficient in biochemical function without apparent microscopic or macroscopic alteration.

He believes that the extraplacental lobe of placenta marginata originates, not directly from the chorion

frondosum, but from the underlying villi which, under the annulus fibrosus, take an active part in the proliferation together with a part of the underlying decidua serotina. The new tissue formed is therefore not simply chorionic but also placental. He believes that placenta circumvallata results from direct continuation of the placental margins, i.e., of the chorion frondosum and decidua serotina combined, so that the chorionic villi of the circumvallate lobe are functioning. Placenta accreta he attributes to lesions in the uterine mucosa.

ANTHONY R. CAMERO, M.D.

Bardram, E. Congenital Kidney Malformations and Oligohydramnios *Acta obst et gynec Scand*, 1930, 7, 134

This article consists of

1. A detailed report of two cases of oligohydramnios with premature delivery of infants with unilateral renal aplasia and, respectively, a congenital cystic condition and hypoplasia of the other kidney.

2. Pathologic anatomical observations on renal aplasia in which attention is called to the frequent association of this condition with malformations of the internal genitalia and extremities, enlarged adrenals, and oligohydramnios.

3. A review of the autopsy reports of the Pathological Institute of the University of Copenhagen in the cases of sixty infants with renal malformations which were stillborn or died soon after birth, together with a review of the obstetrical facts in these cases as recorded in the histories of the mothers in the Royal Maternity Hospital of Copenhagen. These sixty cases included ten of renal aplasia (2 bilateral), seven of renal hypoplasia, two of unilateral cystic kidney, twelve of bilateral cystic kidney, four of horseshoe kidney, twelve of unilateral hydronephrosis, and thirteen of bilateral hydronephrosis.

4. A discussion of the possible causal relationship between oligohydramnios and certain types of renal malformation with deficiency or absence of secreting glandular tissue. Of the cases reviewed, there was a history of oligohydramnios in all of those of bilateral renal aplasia, all of those of unilateral renal aplasia with malformation of the solitary kidney, 67 per cent of those of bilateral congenital cystic kidney, and 43 per cent of those of renal hypoplasia, but in none of those of unilateral renal aplasia and normal solitary kidney, unilateral cystic kidney, or unilateral or bilateral hydronephrosis. This shows relation between hydramnios and defective development of the secreting part of the fetal kidney.

5. A report of the occurrence of hydramnios in three of four cases of horseshoe kidney in which

there was a greater amount of secreting tissue than normal

Schaefer W and Witte E. Studies on the Limitations and Methods of Increasing the Accuracy of Roentgenological Measurement of the Pelvis by Exposures in the Sitting Position (Untersuchungen ueber die Grenze und Steigerung der Genauigkeit von roentgenologischen Beckenmessungen mittels Sitzaufnahmen) *Arch f Gynec*, 1930 cxxxv 438

The authors have determined the most favorable conditions for roentgenological measurement of the pelvis in the sitting position by studying the sources of error. The latter are an incorrect focus plate distance, incorrect measurement of the height of the symphysis, and displacement of the conjugata vera toward the horizontal.

When the centering is done as nearly as possible on the internal border of the symphysis, the best focus plate distance is 110 cm, since when this distance is used and the conjugata vera measures 10 cm, the maximal error will not exceed 3.5 mm. Tipping of the conjugata vera toward the horizontal is reduced to the minimum when the fourth lumbar vertebra is employed as the centering point instead of the fifth. With regard to the obtaining of more accurate knowledge of the conjugata vera, the authors agree with Schumacher that the usual roentgenography in the sitting position should be supplemented by lateral pelvic roentgenography in the sitting position for exact measurement of the child's head.

P. SCHUMACHER (G)

## LABOR AND ITS COMPLICATIONS

Henriet P. Extemporaneous Evacuations of the Uterus at the End of Pregnancy Carried Out During 1929 at the Montpellier Maternity Hospital (Etude statistique et critique des évacuations extemporanées de l'utérus en fin de grossesse effectuée pendant l'année 1929 à la maternité de Montpellier) *Bull Soc d'obst et gynec de Par* 1930 xiv 309

During 1929 24 extemporaneous evacuations of the uterus were done in Delmas' clinic. These constituted 3 per cent of the total number of deliveries (681). They were performed on the following indications: 1 for distorted pelvis, 3 for large size of the fetus, 4 for placenta prævia, 1 for premature rupture of the membranes under doubtful conditions of sepsis, 1 for neglected shoulder presentation, 2 for dystocia due to twins, 1 for albuminuria of pregnancy (5 gm of albumin per liter), 2 for eclampsia, 2 for suffering of the fetus, and 1 for prolapse of the cord.

The 24 women included 5 primiparæ, 8 secundiparæ, 6 tertiparæ, 3 quadriparæ, 1 quintipara, and 1 decipara. One of them was seventeen years of age, 13 were between twenty and thirty years, 9 were between thirty and forty years, and 1 was forty-three years of age. One had been pregnant for seven months, 6 for eight months, 6 for eight and one half

months and 10 for nine months. One had passed term. Fifteen (62.5 per cent) were not in labor. In 2 the cervix was dilated to the size of a franc and in 6 to the size of a 2 franc piece. In 1, the dilatation was intermediate. In 16, the membranes were intact. In 3 they had been ruptured for several hours, in 4 for from twenty-four to forty-eight hours and in 1, for three days. In most of the cases there was a mobile cephalic presentation in the upper strait. In 3 there was a buttocks presentation and in 2 a shoulder presentation. One of the shoulder presentations had been neglected for several hours.

The Delmas technique was used. The first stage consists in the induction of spinal anesthesia, the second of unimanual dilatation of the cervix and the third of extraction of the fetus. There were 7 immediate spontaneous deliveries, 1 spontaneous delivery at the end of five minutes, 7 spontaneous deliveries after about twelve minutes, and 9 artificial deliveries.

The perineum remained intact in 18 cases. A partial tear of the perineum occurred in 3 cases, and a complete tear in 2. These were repaired immediately. Laceration of the cervix occurred in 1 case.

Five of the women had attacks of slight fever during the puerperium and 1 died from puerperal infection.

Nineteen infants were born in good condition. One was revived with difficulty, but survived. Three, including 1 twin, were born dead. One premature infant lived only a few hours. Two of the infants were dead before the intervention—one in a case of central placenta prævia with beginning labor and very severe hemorrhage, and the other in a case of neglected shoulder presentation with prolapse of the cord which had been present for forty-eight hours.

In the cases of placenta prævia and toxæmia of pregnancy, in this series the results of the Delmas procedure were excellent. In cephalopelvic disproportion it is difficult to determine the indications for the method.

In conclusion the author says that artificial delivery after evacuation always favors morbidity, but is seldom necessary.

PAGE

Greenhill, J. P. An Analysis of 874 Cervical Caesarean Sections Performed at the Chicago Lying In Hospital. *Am J Obst & Gynec*, 1932 vii, 613

In this article information is given concerning 1,059 caesarean sections of all types performed at the Chicago Lying In Hospital in the period from July 1, 1915 to July 1, 1929. As there were 51,323 deliveries in that hospital and its dispensary during the same period, the incidence of caesarean section was 2.06 per cent, or 1 caesarean section to every 48.5 deliveries.

The maternal mortality in the 874 cases in which a cervical operation was done was 1.26 per cent. If 21 Porro operations performed after a laparotrachel

otomy are added, the death rate was 1.23 per cent. In the 147 cases in which the classical cesarean section was performed, the mortality was 4.76 per cent. If the 17 Porro operations performed after a classical cesarean section are added, this is reduced to 4.27 per cent.

The chief indications for the laparotrachelotomies were cephalopelvic disproportion in 42.1 per cent of the cases, a previous cesarean section with a test of labor in 11.3 per cent, a previous cesarean section without a test of labor in 6.5 per cent, toxæmia without convulsions in 9.7 per cent, eclampsia in 1.8 per cent, placenta prævia in 4.8 per cent, abruptio placenta in 3.2 per cent, the dystocia dystrophica syndrome in 4.9 per cent, a number of previous still births in 4.2 per cent, and cardiac disease in 3.3 per cent.

Only 50 per cent of the patients were in labor at the time of the operation. Of these, 38.1 per cent had had labor pains for from one to twenty-five hours, 9.3 per cent had had them for from twenty-five to fifty hours, and 2.6 per cent had had them for from two to four days.

In 21.4 per cent of the cases the membranes were ruptured when the cesarean section was performed. The interval between the rupture of the membranes and the time of operation varied from one hour to eight days.

The anæsthetic employed was ether in 35.8 per cent of the cases, novocain alone in 55.1 per cent, novocain with ether or nitrous oxide in 6.1 per cent, ethylene in 2.6 per cent, and nitrous oxide in 0.4 per cent. During the past year, 92 per cent of all cesarean sections were performed under local anæsthesia.

Sterilization by operation on the fallopian tubes was done in 9.6 per cent of the cases. If the Porro operations are included, the incidence of sterilization was 11.7 per cent.

The cause of death in the 11 fatal cases was peritonitis in 3 cases, pneumonia (after ether anæsthesia) in 2 cases, and sepsis, gangrenous appendicitis, pulmonary embolism, antepartum eclampsia, postpartum eclampsia, and tuberculous meningitis in 1 case each.

The maternal mortality according to the indications was as follows: cephalopelvic disproportion, 0.8 per cent; repeated laparotrachelotomy, 1.6 per cent; toxæmia without convulsions, 1.2 per cent; eclampsia, 6.3 per cent; placenta prævia, no deaths; abruptio placenta, 7.1 per cent; cardiac disease, 3.4 per cent; and tuberculous meningitis, 100 per cent.

Fever was present after the operation in 43.4 per cent of the cases. The chief cause of the fever in the 106 cases in which the cause was known was infection of the wound in 6.1 per cent, pyelitis and cystitis in 4.8 per cent, bronchitis in 2.1 per cent, pneumonia in 1.3 per cent, grippé in 1.0 per cent, endometritis in 0.9 per cent, and lochiometra in 0.9 per cent.

In 46.7 per cent of the cases the patient left the hospital within fourteen days after the operation,

and in 84.6 per cent she went home within eighteen days.

The fetal mortality according to the indications for the operation was as follows: cephalopelvic disproportion, 3.3 per cent; repeated laparotrachelotomy, no deaths; toxæmia without convulsions, 7.5 per cent; eclampsia, no deaths; placenta prævia, 23.8 per cent; abruptio placenta, 35.7 per cent; and psychosis, 100 per cent. Twenty-two and a half per cent of the infants which died were dead before the operation, 25 per cent died because of prematurity, 20 per cent died from atelectasis, 10 per cent were monsters, and 5 per cent died from congenital heart disease.

In the 21 cases in which a Porro operation was done there were no maternal deaths and 2 fetal deaths.

E. L. CORNELL, M.D.

## NEWBORN

Martin and Vorkotten. Congenital Syphilis (*Die angeborene Syphilis*). *Monatsschr. f. Geburtsh.*, 1930, LXXX, 128.

The authors state that in comparison with other countries, especially Denmark, Germany is still at the beginning of the struggle against congenital syphilis. As the legal resources for the fight are meager in Germany, education of the laity with regard to the requirements of the campaign is necessary. The most important findings of research on syphilis up to the present time are as follows.

Syphilis in the father can be transmitted to the child only through the mother, the transmission always occurs by passage of the spirochetes through diseased villi in the placenta. Abortions up to the fourth month are not to be ascribed to syphilis. Characteristic of syphilitic infection are the macerated fetuses of the seventh and eighth months. The ratio between the weight of the placenta and that of the child is significant. In the newborn, the Wassermann reaction is uncertain during the first six weeks; it may even be negative in the presence of positive clinical symptoms. Children of mothers who have received thorough treatment previous to becoming pregnant should be given the same treatment as children whose mothers had a positive reaction during pregnancy.

In the fight against congenital syphilis it is most important to recognize syphilis in the pregnant woman. Therefore a Wassermann test should be made in every case of pregnancy. The pregnant woman is to be regarded as syphilitic if, in 2 blood tests made at least ten days apart, the reaction is positive. Such women should be treated energetically with neosalvarsan and bismuth. The authors give 3 injections of 0.45 gm. of neosalvarsan within fourteen days and repeat this treatment after an interval of five or six weeks. If the duration of the pregnancy will not permit repetition of the injections according to schedule, the interval may be shortened without harmful results. After delivery the treatment is continued. Unmarried mothers and their

children are kept at the clinic until the treatment is completed

The diagnosis of congenital syphilis in the child is based chiefly on the blood test of the mother as clinical signs of the disease are usually absent in the infant. The diagnosis is confirmed when the spirochaete is found in the umbilical cord (tissue fluids, frozen sections). The presence of osteochondritis and periostitis is easily determined by examination with the roentgen rays. The ratio between the weight of the child and the placenta is another aid in the diagnosis.

With regard to the treatment of the child there is a difference of opinion. Gammeltoft (Denmark) is opposed to treatment when the serological reaction is not positive and there are no clinical signs of the disease. He emphasizes, however, that the child should be kept under observation for at least six months. As conditions are different in Germany, the authors demand that all endangered infants be given thorough treatment immediately after birth. Endangered children are those whose mothers were syphilitic before or during the pregnancy. These children should be reported to the clinics which have been established to give advice to mothers. In the authors' cases the preventive treatment of the newborn is begun on the third day after birth with spirocid tablets of 0.25 gm. The authors base their opinion on their experience with 117 babies. In the cases of prematurely born infants they begin the treatment on the third day with one fourth of a tablet. The treatment should be instituted gradually but the dose increased as rapidly as possible until 1 tablet is given daily. If

diarrhoea or vomiting supervenes the treatment should be stopped and after cessation of the symptoms should be begun again with the initial dose. The authors have observed cases in which the baby was able to tolerate 1 gm. of spirocid on the seventh day. The rapidity with which the dose can be increased depends upon the individual infant. No general rule can be laid down. The spirocid tablets are dissolved in mother's milk. For the entire treatment 30 gm. of spirocid are used. Under this management the infants progress remarkably well. (GRLAUFELD (G))

# MISCELLANEOUS

Collier H E and Redditch M O H. A Study of the Influence of Certain Social Changes upon Maternal Mortality and Obstetrical Problems 1834-1927. *J Obst & Gynec Brit Emp* 1930 11:211, 27

The authors reviewed over 1 600 obstetrical case records which were available in a small rural region. The records extended back over a period of ninety years. In spite of the development of trained midwives the use of anaesthesia and other advances in obstetrics the maternal mortality has not shown any great change. This fact is attributed to (1) the relative increase in primiparity with restriction of the size of the family (2) the increasing average age of all mothers primiparæ and multiparæ (3) changes in obstetrical methods especially the increasing use of forceps and (4) periodical variations in the average shape of the pelvis of child bearing women.

HARRY M NELSON M D

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Trémolieres, F. Tardieu, A., Cartaud, A., and Normand E. Acute Generalized Cancer of Septicæmic Form Arising in the Suprarenal Cortex (Cancer aigu généralisé d'origine cortico surrénale à forme septicémique) *Bull et mém Soc méd d hop de Par*, 1930, xlii, 710

Malignant tumors of the suprarenal cortex may be divided according to their clinical manifestations into four types (1) those which betray their presence by an endocrine syndrome such as acute suprarenal insufficiency or suprarenal virilism, (2) those which form an apparent abdominal mass associated with variable signs of compression, (3) those manifested by a paroxysmal or continuous hypertension, and (4) those masked by the signs of multiple metastases to which they have given rise

The authors report a case of epithelioma of the suprarenal cortex, which, without any other endocrine indication than marked adynamia, without any manifestation of tumor, and without arterial hypertension, formed multiple metastases evidenced only by the signs which are usually associated with septicæmia

The patient was a man fifty one years of age who entered the hospital complaining of extreme fatigue and a fever of 40.8 degrees C. His first symptoms had been marked anæsthesia associated with high fever which recurred for several days. Thirteen days after the beginning of the disturbance he began to have severe pains in the calves and the plantar surfaces of the feet. These were more intense on the right than the left side and were relieved only temporarily by the recumbent position. He then developed a cough without expectoration. On examination at the time he entered the hospital, râles were noted in the right axillary region. The pulse was 110, regular, and strong. The systolic pressure was 11 and the diastolic 7. The liver was enlarged and painful on pressure. Blood cultures revealed nothing.

In spite of treatment with quinine, septicæmicine, caffeine, and camphorated oil, the patient died one month after the beginning of the disease.

Histological examination at autopsy showed that the cancer had its origin in the suprarenals and had formed metastases in the thyroid, lungs, pleura, glands of the hilum of the lung, aortic semilunar valve, diaphragm, kidneys, liver, pancreas, and spleen, and a perigastric gland. There was massive mortification. Such rapid propagation of a neoplasm in the suprarenal to so many parts of the body and to such a remote organ as the thyroid gland could have taken place only through the circulation.

PAGE

MacKenzie, D. W. Perirenal Hæmatoma Primary with Polycythæmia. *J Urol*, 1930, xviii, 535

MacKenzie reports a case of spontaneous perirenal hæmorrhage in an adult male who after operation showed the blood picture of polycythæmia. However, in this case it was impossible to tell whether the polycythæmia was the cause or the result of the perirenal hæmatoma. No red blood counts had been made prior to the hæmorrhage.

The cystoscopic findings were essentially negative, but the pyelogram showed downward displacement of the kidney from external compression.

The source of the hæmorrhage was not discovered at operation or on examination of the removed kidney.

Spontaneous perirenal hæmatomata may be divided into two groups, (1) primary non traumatic or essential type, and (2) secondary type or those due to known causes, such as tuberculosis tumor, aneurism, or perinephritic abscess.

Of sixty six cases reviewed by MacKenzie a correct pre operative diagnosis was made in only 5. The mortality of immediate operation was 50 per cent, but in the cases not operated upon the mortality was 100 per cent. In the majority of the cases of the primary or essential group the source of the hæmorrhage or its causative factor was not demonstrated.

JACOB S. GROVE, M.D.

Rost. Vesical and Renal Stones in Experiments on Animals (Blasen und Nierensteine im Tierversuch) *53. Tag d. deutsch. Ges. f. Chir.* Berlin 1930

The author first calls attention to the marked increase in the number of cases of renal calculus in recent years. This increase seems to be greater in the cities than in the rural districts. A 10 to 15 fold increase is reported. The author attempted to discover the cause of renal and vesical calculi in about 850 experiments on animals. He endeavored to answer principally 3 questions: (1) Are phosphatic stones due to a deficiency of vitamins? (2) Is it possible to obtain uric acid and oxalate stones in experiments on animals? (3) Is it possible to produce stones in animals in other ways than by the methods usually employed?

In answer to the first question Rost says that phosphatic stones cannot be regarded with certainty as due to avitaminosis alone. However the experiments showed definitely that the withdrawal of fluid favors stone formation. Similarly, the abundant administration of fluids favorably affects the passage of stones. This is true particularly of water and milk. Of the mineral springs, Wildungen water should be mentioned first. However, this should not be used over a period of years as it may itself lead to stone formation.



The formation of oxalate stones can be obtained with certainty in 100 per cent of experiments on animals by the administration of oxamide, regardless of the basic diet. Oxalate stones are formed also when a large quantity of tomatoes is given. In cases of oxalate stones nothing is gained from the administration of milk or other fluids, only dietetic therapy is of value.

The question as to whether stones can be produced in other ways than those usually employed was difficult to answer. All salts, earthy phosphates and roentgen irradiation were tried without positive results. Positive results were obtained only on the administration of sour beer. Mechanical shaking up caused hemorrhages in the bladder and the formation of fibrin but failed to cause stone formation.

No definite conclusions could be drawn from the experiments with regard to the increase in the frequency of stone formation. The author believes that varied influences are responsible.

STLTTNER (Z)

**Jugano M. Two Nephrectomies for Tuberculosis Performed on the Basis of Ambard's Constant Localization of the Diseased Kidney by Endo-venous Pyelography.** (*Deux néphrectomies pour tuberculose sur la constante localisation du rein malade par la pyélographie endoveineuse*) *J d urol med et chir* 1930 **xxix** 377

The nephrectomies reported in this article were based exclusively on Ambard's constant: the elimination of phenolphthalein and Albarran's polyuria test. The patients were a boy of fifteen years and a man of fifty years who entered the hospital on account of severe cystitis. Ureteral catheterization by cystoscopy being impossible, the side of the renal involvement was determined from the non elimination of uroselectan on that side. The injection of uroselectan did not increase the bladder disturbances nor cause a rise in the temperature. In both cases the nephrectomy was performed on the following day.

## BLADDER URETHRA, AND PENIS

**Martin M. J. Perforation of the Bladder During Cystoscopy Under Epidural Anesthesia at the Site of a Small Tuberculous Ulceration of the Apex: the Only Lesion of the Organ.** (*Perforation de la vessie pendant une cystoscopie sous anesthésie épidurale au niveau d'une petite ulcération tuberculeuse du sommet: seule lésion de l'organe*) *J d urol med et chir* 1930 **xxix** 391

Martin's case was that of a man aged forty-one years who gave a history of an attack of hæmaturia seven years previously, pollakiuria persisting for some time and several attacks of renal colic on what proved to be the sound side. The very frequent desire to urinate was accompanied by severe pain. The urine was pale and cloudy and contained numerous leucocytes and Koch bacilli. The constant was 0.14 and the blood urea 0.35 per 1,000.

On cystoscopic examination the bladder was found to have a very small capacity. The mucosa was uniformly red. The ureteral orifices could not be distinguished. Under epidural anesthesia the bladder could be distended with the piston and syringe to a capacity of 65 or 70 c. cm. without the least effort. At this point the patient felt pain and the injection was stopped. The next day there were signs of perivisceral inflammation which increased. A phlegmon of the space of Retzius developed. Six days after the accident the space of Retzius was evacuated. Perforation of the bladder was apparent as water injected by the ureter was discharged through the infrapubic incision. Operation was followed within a few hours by death.

At autopsy, the most careful examination of the vesical mucosa failed to reveal any other lesion of the bladder and the appearance of the ureteral orifices was absolutely normal.

The danger of rupture of the tuberculous bladder is especially great when spinal anesthesia is used. When the patient is under anesthesia the physician should not endeavor to dilate the bladder very much beyond its capacity before the induction of the anesthesia. After exploration under anesthesia a sound should be left in the bladder as otherwise it will be likely to fill before the patient has recovered consciousness and may become sufficiently distended to rupture.

PAGE

**Campbell M. F. Submucous Fibrosis of the Bladder Outlet in Infancy and Childhood.** *J Am M Ass* 1930 **xciv** 1373

Submucous fibrosis of the outlet of the bladder is characterized by sclerotic atresia of the orifice. The pathological changes and the symptoms are the direct results of urinary obstruction. The destructive process is usually accelerated by infection.

The cause of the condition is unknown. In children the fibrosis is congenital and the symptoms date from early infancy. In adults a clinically similar lesion is often due to congenital fibrosis but urogenital infection helps to explain the sclerosis.

Histologically the lesion is characterized by a great increase in the connective tissue in the submucosa of the outlet of the bladder. This may involve the sphincteric ring and extend some distance into the musculature of the bladder wall. Round cell infiltration is usually observed, and in the presence of active inflammation polymorpho-nuclear cells may be found. The concomitant changes seen in the prostate and subtrigonal glands in the adult are lacking in children. The pathological changes in the urinary tract are identical with those of other types of intravesical obstruction. Hypertrophy of the bladder and dilatation of the ureters and renal pelvis are common and the kidneys are both structurally and functionally altered. Diverticulum and stone formation in the bladder are frequent complications.

The symptoms of fibrotic obstruction of the neck of the bladder may be divided into those of urinary

difficulty and those resulting from renal injury and infection. The cardinal symptoms, frequency and difficulty of urination, are constantly present from infancy. There may be paradoxical incontinence due to chronic over distention of the bladder suggesting enuresis. Vesical distention causes persistent pain in the lower part of the abdomen and is demonstrated by the findings of palpation and percussion or disappearance of the mass on catheterization. Pain over one or both kidneys may accompany strenuous efforts at voiding. Infection with pyuria is the rule and is usually accompanied by a low grade fever. With marked renal injury systemic symptoms of uræmia appear.

The diagnosis is not difficult and is made conclusively by cystoscopy. Frequency, dysuria, pyuria, and enuresis indicate urinary tract disease. A careful urological examination should be preceded by a chemical study of the blood especially for urea, non protein nitrogen and creatinin, and by a determination of the two hour excretion of dye from the kidneys. A roentgen examination should be made for urinary calculi and spinal abnormalities especially spina bifida. A cystogram will show changes in the bladder wall such as dilatation trabeculation, diverticula, and an abnormal contour. Difficulty in catheterization at the bladder neck is an important clue to the nature of the condition. The large amount of residual urine usually present in the bladder in these cases should not be evacuated suddenly; it should be withdrawn gradually by an indwelling catheter. The general anesthesia required for the cystoscopic examination in the cases of very young children is of short duration. In the cases of girls over five and boys over eight years of age, anesthesia is generally unnecessary. If considerable fibrosis is present, the bladder neck will firmly grasp the infant cystoscope and when the tip of the instrument is withdrawn from the scar a "jump" may be felt.

Congenital fibrosis of the neck of the bladder must be differentiated from congenital valves of the posterior urethra, urethral stricture, and neuromuscular disease of the bladder. Urethral instrumentation and cystoscopy will reveal the presence of stricture and valves but the cystoscopic diagnosis of late neuromuscular disease is often difficult.

The prognosis is dependent upon the degree of renal injury. If renal function remains low after the establishment of free urinary drainage, the outlook is most unfavorable.

The treatment is surgical excision of the obstruction. The pre operative and postoperative measures are the same as those indicated for prostatectomy. Decompression with a suprapubic tube is preferable to the use of an indwelling catheter. Fluids should be forced, and operation delayed until the usual shock of decompression has passed off and function will permit it. The miniature Young prostatic punch is best. After the operation supportive treatment such as blood transfusion and the forcing of fluids is indicated. CLAUDE D. HOLMES, M.D.

Thévenot, L., and Verriere P. Azotæmia in the Presence of Stricture of the Urethra (*L'azotémie chez les rétrécis*). *J. d'urolog. méd. et chir.*, 1930, xxix, 225.

From a study of the urea content of the blood in twenty two cases of stricture of the urethra, which they report in detail the authors draw the following conclusions:

1. In all cases of stricture of the urethra the condition results sooner or later in interference with the excretion of urine and consequent renal and general disturbances manifested by an increase in the urea content of the blood.

2. The increase in the urea in the blood is dependent upon a number of factors. The chief factor is chronic complete or incomplete retention. This is especially important if it is accompanied by marked distention. Accessory factors are the degree of the stricture, the length of time it required to develop, the age of the subject, and the presence of associated pathological conditions.

3. The urea content of the blood indicates that as regards the prognosis the cases may be divided into three groups: those in which the blood urea is less than 50 ctgm, those in which it is between 50 ctgm and 1 gm, and those in which it is above 1 gm. In cases of the first group the condition is easily relieved. When the urethra is dilatable it should be dilated. When it is not dilatable, electrolysis should be used. When it is rigid, urethrotomy is indicated. In rare instances of traumatic stricture urethrectomy may be necessary. In cases of the second group the treatment indicated is the same as that for cases of the first group but extra care is necessary. Dilatation is usually followed by fever. In the cases of the third group the bladder should be evacuated by external urethrotomy or cystostomy and the prognosis should be guarded.

## GENITAL ORGANS

Redon, H. Notes on Chronic Epididymitis in the Adult (*Remarques sur les épididymites chroniques chez l'adulte*). *J. de chir.*, 1930, xxx, 481.

The author discusses sporotrichosis as a cause of epididymitis atypical gonococcal epididymitis, the bacillus coli and staphylococcal types and finally certain vague non tuberculous types. Epididymitis due to sporotrichosis is very rare and may simulate tuberculous epididymitis. Only a dozen cases have been reported. In the majority there were associated multiple cutaneous and subcutaneous lesions. Lagoutte and Brian reported the first cases in 1909. The experimental work of Gougerot, de Beurmann, and Vaucher in 1912 demonstrated that in the rat sporotrichosis localizes so frequently in the epididymis that this localization may be considered a characteristic of the infection. In 1922 Thévenard reported a case which was diagnosed by the agglutination reaction and the response to iodide treatment. Redon reports two cases which had been incorrectly diagnosed clinically as tuberculous epididymitis.

The most common cause of epididymitis is the gonococcus. In chronic gonorrheal epididymitis the diagnosis may be difficult. Fournier has described a pseudotuberculous form of gonorrheal epididymitis with an insidious subacute course and no pain which may persist for several weeks or months and then go on to resolution or suppuration. The author reports the occurrence of this type with varied clinical manifestations in two men who gave a history of repeated gonorrheal attacks. In the diagnosis physical examination should be supplemented by prudent intra urethral instrumentation and direct examination and culture of the prostatic secretions after reactivation and prostatic massage.

Four cases of epididymitis due to the bacillus coli are reported. In the majority the onset was sudden and painful and associated with general manifestations and the gram negative bacilli were found in the urine. Good results were obtained by general hygienic treatment, hot applications, and the use of bacillus coli vaccine.

Also reported are three cases of staphylococcal origin. In one of these cases that of a fifty year old diabetic there had been repeated attacks of furunculosis and for six weeks a progressive and some what tender swelling of the right scrotum. A diagnosis of massive tuberculous epididymitis and orchitis was made and hemicastration was performed. Histological examination showed no evidence of tuberculosis and bacteriological study revealed a pure culture of staphylococcus albus.

In six cases of epididymitis it was impossible to determine the cause. In four of these the possibility of tuberculosis was ruled out. A complete and rapid cure was obtained.

From the clinical point of view three main types of epididymitis may be distinguished: (1) the epididymitis of undoubtedly tuberculous origin; (2) chronic epididymitis of non tuberculous origin which includes the types due to the bacillus coli, the gonococcus and sporotrichosis; and (3) types due to unknown causes.

As a rule tuberculosis of the epididymis involves the prostate and seminal vesicles.

JACOB E. KLEIN, M.D.

**Cavina C.** A Contribution to the Clinical and Anatomopathological Study of Seminoma of the Undescended Testicle. (Contributo allo studio clinico ed anatomico patologico del seminoma del testicolo ectopico a sede addominale). *Clin. chir.* Milan 1930 VI 393.

The author reports a case of seminoma of an undescended testicle in a man twenty nine years old and discusses the diagnostic difficulties encountered when such a tumor begins to develop and when it is visible and easily palpable. He suggests surgical and X ray treatment which have been used by him with some success over a long period of time. Following a review of the literature on the subject he concludes that examination of the scrotum is of great value in the diagnosis of abdominal tumors

and that the undescended testicle is predisposed to tumor formation in all stages of its descent.

ANTHONY R. CAMERO, M.D.

**Retterer E.** The Evolution of Testicular Grafts of the Goat and Ram. (De l'évolution des greffes testiculaires du bouc et du bélier). *J. d'urolog. méd. et chir.*, 1930 XLIX, 337.

The goat and the sheep are closely related. In Cbh and Peru the coupling of the goat and sheep has produced hybrids which are fertile for several generations.

The testicle of the young goat that furnished the grafts studied by the author did not yet contain spermatids or spermatozooids. The seminal tubes were from 0.10 to 0.12 mm in diameter. Their walls were covered by several layers of epithelial cells and presented a lumen containing nuclear and cellular detritus. At the points where the tubes were joined to each other there were intervening tracts of connective tissue. The intertubular connective tissue was most abundant at the angles. Each seminal tube was surrounded by a thin smooth membrane.

The elements of the graft survived in the goat and the ram for two years but in the absence of functional stimulation the epithelial cells of the seminal tube transformed themselves into a syncytium rich in nuclei. The syncytial cytoplasm developed into young connective tissue the protoplasm of which liquefied and the nuclei of which became hemoglobin. The elements of the graft retrogressed slowly and for two years furnished to the host secretory products which, passing into the circulation explained the physiological effects of the transplant on the host.

Retterer describes the origin and development of the tegumental membranes and their derivatives, and compares the evolution of testicular and pancreatic grafts with that of carcinoma grafts.

The general conclusions drawn by the author from his studies are summarized as follows:

1. The epithelium of the seminal tubes develops differently and changes its structure according to age, surroundings, functional stimulation and nutrition. The ectopic testicle does not succeed in forming spermatozooids but its epithelium produces a testicular hormone which is more or less abundant according to the animal species and the subject.

2. The age of the subject from which the graft is taken is not unimportant, a young testicle (i.e. prepubescent) possesses protoplasm which is more viable and develops more slowly in the host than that of the adult testicle.

3. When the tracts of excretion are completely suppressed (transplantation or excision of the excretory passages) the development of the external secretion is quickly arrested but the internal secretion is conserved for the testicle for two or three years. During this time the seminal epithelium changes in structure and develops into young connective tissue. After the latter becomes fibrous there is no longer any hormonal manifestation.

4 The testicular graft insures the survival of the superficial portion of the transplant, the epithelium of which continues to furnish the host with products of internal secretion. However, the epithelium gradually changes in structure and is converted into young connective tissue (homogeneous syncytium or reticulated tissue with meshes full of hyaloplasm). As long as cords or accumulations of this young connective tissue persist (two, three, or four years), the homogeneous cytoplasm of the latter melts and throws into the circulation of the host white cells and plasma which preserve or augment the muscular and nervous energy. As the epithelium disappears and the connective tissue becomes mucous or fibrous or degenerates while its nuclei are undergoing hemoglobin transformation the internal secretion decreases until it ceases completely, as did the external secretion from the moment that the transplantation was done. PAGE

### MISCELLANEOUS

Levy, M. M., and Levy, E. The Hydrogen Ion Concentration of the Urine and the Secretion of Hydrochloric Acid in the Stomach (pH unnaire et sécrétion gastrique de l'acide chlorhydrique) *J d'urolog méd et chir* 1930, xiv, 398

The determinations herewith reported were made on fourteen subjects who had fasted from the evening before. The first step consisted of collecting the gastric fluid with the aid of an Eihorn sound, which was left in place until the end of the experiment and of emptying the bladder. A subcutaneous injection of from 0.75 to 1 mgm of histamine hydrochlorate was then given and the gastric juice aspirated by means of a syringe attached to the end of the Eihorn sound. The gastric fluid extracted during the first thirty to forty-five minutes after the injection of histamine was placed in a receptacle. Just as the extraction of gastric fluid ceased, the urine was collected a second time. During the next thirty minutes a third specimen of gastric juice was obtained, and at the end of that period the bladder also was emptied for the third time. When the gastric secretion was particularly abundant, the gastric fluid and urine were collected for another thirty minute period.

The acidity of the three samples of gastric juice was determined by titration with tenth normal sodium hydroxide in the presence of phenolphthalein. The hydrogen ion concentration of the urine was determined immediately after urination by the Levy Darras, Weill and Guillaumin colorimetric methods.

From their experiments, the authors conclude that the degree of alkalinization of the urine was not directly related to the quantity of hydrochloric acid secreted by the stomach. The chief factor governing the hydrogen ion concentration of the urine was diuresis. Polyuria was associated with an increase and oliguria with a decrease of the hydrogen ion concentration. PAGE

Brull, L. Experimental Polyuria (Polyurie expérimentale) *Rev belge d sc méd*, 1930, ii, 121

In experiments carried out by the author on dogs under narcosis hypophysectomy was followed immediately or within a few hours by intense polyuria with arrest of the excretion of chlorides. These phenomena could not be produced by cauterization of the tuber cinereum. The injection of pituitrin overcame the effects of the hypophysectomy.

Brull discusses the importance of the pars tuberalis in the regulation of urinary secretion. He states that the fact that in hypophysectomy all or a part of the pars tuberalis is preserved supports the theory that this part plays a compensatory secretory role in the absence of other portions of the gland.

Epstein, G. S. The Pathogenesis of Gonorrhoea (Sur la question de la pathogénie de la blennorrhagie) *J d'urolog méd et chir*, 1930, xiv, 255

Gonorrhoea is believed by some to be an essentially local infection of the urethra and glands and by others to be the local manifestation of a general systemic disease. The author gives the arguments for both theories and reviews the explanations advanced for the persistence of the profound anatomical changes and destructive processes when the provocative agent is no longer present, the frequent successive invasions of other parts, and the involvement of the epididymis without involvement of the testicle. He then reports the conclusions regarding the pathogenesis of the condition which have been arrived at in the laboratory of Speransky with whom he has been working during the past two years. Speransky studied the relation between the nervous system and trophic disturbances and the mechanism of development of the trophic disturbances.

Experiments demonstrated that the liquids contained in the interstices of the nerve trunk have a circulation. Substances toxic to the nerve cells introduced into the interstices of the nerve trunk or at the periphery produce a cellular decomposition in an inflammatory area. The irritation then spreads in the nervous system and invades neighboring cells. Most markedly affected are the nerve cells of the segment to which the nerve corresponds. Later, other cells of the nervous system and the sympathetic become involved. There develops in the periphery of the segment affected a local pathological process which sometimes passes beyond that segment. Croton oil introduced into one branch of the trigeminal nerve produced inflammation in the parts innervated by the other branches.

For the appearance and development of inflammatory disorders at the periphery it is not necessary for the irritants to remain permanently in the tissues. They may penetrate the nerve trunk but once. In tuberculosis the nervous system is invaded in the manner described soon after the onset of the process, and the character and later course of the malady are there determined.

Gonorrhoea, like other infectious diseases begins with a period of incubation. Toxins elaborated dur-

ing this period attack the peripheral ends of the nerves and from there penetrate to the nerve trunks. By this route they ultimately reach the nerve cells. The peripheral tissues are influenced by two irritants: the infecting agent and the nervous irritation caused by it. The local inflammatory process may show complete absence of the gonococcus but persist because of the involvement of the nerve cells. As a result the nerve cells of the urethra, bladder, prostate, seminal vesicles and epididymis become associated in the process. These organs are closely related in their development.

The trophic nerves may be acted upon by the irritant to the point where because of the organic alterations within them they cannot recover their condition of functional equilibrium and the local processes that result from them in the zone of the complex nervous segment acquire a chronic character. Cessation of chronic inflammatory symptoms depends upon re-establishment of the normal function of the nerve cells. If this does not take place the disease is incurable (Speransky).

The association of one or two articulations in the inflammatory process is explained not by transportation of the gonococcus in the blood or lymph but by the close relations of the corresponding nerve cells. A gonococcus in the blood stream may lodge in an articulation rendered sensitive and from that location affect the local tissues and the corresponding nerves.

Whatever exercises a general influence on the organism modifies the activity of the nerve cells and may light up an old pathological process that has appeared cured. Therefore sexual excesses and alcoholism produce recurrences of arthritis, epididymitis and other manifestations of gonorrhoea.

In conclusion the author says that new ideas regarding the process in question may aid in the discovery of a procedure that will result in improvement of the treatment of gonorrhoea.

FLORENCE A CARPENTER

Campbell M F. Urinary Calculi in Infancy and Childhood. *J Am U* 1st 1930 xiv 17-3.

In reviewing 30 cases of urinary calculi in children the author states that failure to subject children with chronic pyuria to a complete urological examination accounts for the rarity with which in the past urinary stones were discovered in early life.

Seventeen of the 30 cases reviewed were found at autopsy on 2420 infants and children. Stones of less than 3 mm diameter were disregarded. Of the 13 cases in which the stones were found during life they were removed in 11. In 1 case operation was refused, and in another nephrectomy was done for pyonephrosis.

Urinary calculi are generally attributed to colloidal precipitation about a nidus of bacteria or cellular debris. The small uric acid concretions commonly found in the renal pelvis of the newborn and very young are of little clinical importance as they are usually passed before many months of life. How-

ever, some of them may become nuclei for larger stones. The stones of later childhood are usually composed of urates or calcium phosphate. From 10 to 25 per cent are uric acid stones. In the series of cases reviewed by the author uric acid and phosphatic stones were found with equal frequency. The number of stones in the individual case ranged from 1 to 20.

Urinary calculi may be formed at any age, even in fetuses of from six to eight months. In the cases reviewed by the author in which the stones were found during life the average age was eight years, whereas in those in which they were discovered at autopsy it was nine years and eight months. According to the literature urinary calculi occur more frequently in boys than in girls, but in the author's cases they were found with equal frequency in boys and girls. In 17 they were on the right side and in 7 on the left. In 6 cases they were present on both sides. Only 5 stones were found in the bladder.

The greatest obstacle to the passage of stones is the vesical outlet, especially in the male. In none of the cases seen by the author was a stone present in the ureter, but there are records of cases in which renal, ureteral, vesical, and urethral stones were found simultaneously in children.

The pathological changes in the urinary tract that may be associated with urinary calculi include pyelonephritis, hydronephrosis, pyonephrosis, ureterectasis with or without stricture, and dilatation, trabeculation and diverticulitis of the bladder. Definite mural obstruction is usually demonstrable along the urinary tract. In 3 of the cases reviewed by the author in which the stone was found during life ureteral blockage from atresia was present, in 1 case a ureterocele with a pinhole os was found, and in 1 case there was congenital fibrosis of the outlet of the bladder.

The symptoms of urinary calculi in children are predominantly those of infection, but pain may be the first indication of acute illness. The most common symptoms are pyuria, urinary frequency, and dysuria with localized radiating or indistinct pain. Hematuria may be absent. In the cases reviewed the duration of the symptoms ranged from twenty-six hours to five years. Because of persistent pyuria calculus disease is usually diagnosed as chronic pyelitis. Often the chief symptoms are a loss of weight, anorexia, nausea, vomiting, intestinal disturbances, and pallor, a syndrome suggesting a gastro-intestinal condition. Fever is rarely present unless urinary obstruction exists. When infection accompanies complete or nearly complete urinary obstruction the temperature may be very high and associated with marked toxæmia and prostration.

The diagnosis of urinary stone is often suggested by the symptoms and physical observations and confirmed by urological examination. A hydronephrotic or pyonephrotic mass due to stone obstruction may be felt, a low ureteral or vesical stone may be palpated rectally, or urethral examination may disclose a stone. Laboratory examinations indicate

the nature of the bacterial invasion, the degree of the pyuria, the retention of nitrogen in the blood, and the function of the kidneys. In some cases the stone may be revealed by roentgenography, but in the very young most stones are composed of uric acid and hence are not radiopaque. Cystoscopic examination is also necessary. In the cases of girls over five years and boys over eight years of age it should be done without anæsthesia. For ureteral stones a wax bulb catheter should be used. Ureteral catheterization is indicated for the collection of separate urine specimens to determine the function of each kidney. Pyelography should be done on the involved side, without anæsthesia.

The treatment is usually surgical, but occasionally ureteral stones will pass after ureteral dilatation. About 90 per cent of renal stones pass to the bladder and most of these eventually pass the meatus. Nephrectomy is indicated only when the kidney is totally destroyed or when removal of the stone by nephrotomy would cause renal destruction. Pyelotomy is often possible. Impacted ureteral calculi are removed easily by ureterotomy. Small, soft bladder stones may be crushed, but large or hard stones in the bladder require cystotomy. Soft urethral stones have been crushed within the urethra, but are removed with more certainty and less risk by urethrotomy.

LOUIS NEUWELT, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Moriconi L. Exostosis Bursata (L. exostosi bursata)  
*Rassegna interna di clin e terap* 1930 xi 239

The exostosis bursata was first described by Volkmann in 1869. It is a cartilaginous exostosis with its free end covered by a sac with synovial contents. Of eleven exostoses seen at the Pisa Clinic since 1921, four were of this type.

In connective tissue exostoses the bone is derived from periosteum, tendon or fascia and develops into bone by metaplasia. Cartilaginous exostoses which are more common originate in the epiphyseal cartilage develop by a cartilaginous bone formation and are usually para epiphyseal and pedunculated. Volkmann attributed the outgrowth of the cartilage ends to the effect of muscular pull after softening of the epiphyseal cartilage by rickets. In the opinion of others the condition is congenital. A third group believe the cause to be a dystrophy, hereditary, syphilis, tuberculosis, hyperthyroidism, an endocrine disturbance or fracture. When the exostoses are multiple they tend to be symmetrical.

Moriconi classifies exostoses with a well defined bursa in a distinct group by themselves. He states that the sac of the bursa is inserted into the cartilaginous covering of the free end of the exostosis just as the articular capsule is inserted about a joint and that the synovial fluid and lining are like those of a joint. According to one theory the bursa is the result of wear and tear, whereas according to another it is formed in a true joint capsule. The author's cases lead him to conclude that the bursa is a closed sac on the superficial surface of the exostosis. Moriconi cites four cases in which microscopic examination showed that the exostoses were continuous with the bone proper and covered by a layer of cartilage of varying thickness. The wall of the bursa was of connective tissue distinctly free separate and clearly defined and adherent to the surrounding soft parts proving the bursa to be of adventitious origin and of no significance in the classification of the exostoses.

KELLOGG SPEED, M.D.

Behring, I. Tumors of the Long Bones Their Diagnosis and Treatment (Beitrag zur Kenntnis der Tumoren den langen Roehrenknochen ihre Diagnose und Therapie) *Acta chirurg Scand* 1930 lxxi 197

The author has studied 384 cases of sarcoma of the long tubular bones and the clavicle which were treated during the period from 1900 to 1926. For 246 cases including 27 giant celled sarcomata and representing 48 Swedish hospitals and surgical

departments the diagnosis of osteogenetic sarcoma or giant celled sarcoma may be regarded as established. In all but 2 it was based on histological examination. The statistical discussion covers only this part of the material.

Of 66 patients with sarcoma of the femur who were operated upon radically (9 by resection, 24 by amputation, and 33 by exarticulation) 8 (1 treated by resection, 6 by amputation and 1 by exarticulation) were free from recurrence after at least four years.

Of 69 patients operated upon radically for sarcoma of the tibia (3 by resection and 66 by amputation), 19 (1 treated by resection and 18 treated by amputation) were free from recurrence after at least four years.

Freedom from recurrence for at least four years was obtained also in 3 of 15 cases of sarcoma of the fibula (in 10 of which a resection or extirpation was done and in 5 of which amputation of the femur or exarticulation of the hip was performed). All of the 3 cases were treated by resection or extirpation.

Of 31 patients operated upon for sarcoma of the humerus (12 subjected to resection, 2 to amputation, 10 to exarticulation and 7 to interthoracic amputation of the scapula) 3 (2 treated by resection and 1 treated by exarticulation) were free from recurrence after at least four years.

In all of the 27 cases of giant celled sarcoma which were operated upon more or less radically the pathologist, who in practically every instance had had long experience in the diagnosis of tumor disease, gave the diagnosis of giant celled sarcoma unreservedly. In 6 of these cases however death resulted from metastases. This figure appears to the author to be too high to be dismissed by referring the prognostically unfavorable cases to other groups of bone disease. It seems to him that the disputed question of whether giant celled sarcomata are always benign growths should be left open for the present.

The more important conclusions which Behring draws from the material studied are as follows:

1. In sarcoma of the femur, tibia and humerus with a periosteal origin and in central sarcoma that has penetrated the osseous capsule and the periosteum resection with or without osteoplastic surgery offers only a very slight prospect of relief even when extensive excision of the soft parts is done.

2. In osteogenetic sarcoma of the fibula the late results of resection or extirpation of the fibula are relatively favorable, freedom from recurrence for at least four years being obtained in 33 per cent of the cases.

3. In osteogenetic sarcoma localized in the lower end of the femur and to the tibia and treated by

amputation of the femur the late results are fairly favorable, freedom from recurrence being obtained in 25 and 27.3 per cent of the cases respectively.

4 In femoral and humeral sarcoma with such a high localization or such extensive dissemination that eviculation of the hip or interthoracoscapular amputation is necessary, the operative mortality is relatively high (10 per cent) and freedom from recurrence for at least four years is obtained in only 4 per cent of the cases.

5 The prognosis is less favorable in peripheral sarcoma than in central sarcoma.

6 Histopathological examination of the sarcomatous tumors in the cases reviewed showed a considerably higher percentage of tumors with differentiation of maturer tissue in the non recurrent cases than in those in which death occurred from the disease, namely, 85.5 and 43.6 per cent respectively.

7 When microscopic tumor infiltration has occurred into the evacuated regional glands, the prognosis is definitely unfavorable.

8 Exploratory osteotomy renders the prognosis worse.

9 The average postoperative length of life computed for all patients dying from sarcoma after operation is twelve and a half months.

Geschickter, C. F., and Copeland, M. M. Recurrent and So-Called Metastatic Giant-Cell Tumor. *Arch. Surg.*, 1930, 75, 713.

The authors review 41 cases of giant cell tumor showing clinical or microscopical evidence of malignant tendencies. In 26 in which the tumor recurred after primary curettage the recurrence was found to depend, not on the histological structure of the neoplasm but on poor choice of treatment or incomplete operation (incomplete curettage, failure to use the thermal or chemical cautery, or needless sacrifice of cortical bone at operation). The original tumor was always benign. Many of the recurrences developed in older persons, in non-weight bearing bones, especially the lower end of the radius, in which the symptoms are of longer duration because the pain is less, and in bones in which the cortex was broken. An intact bone shell and vascular supply are most important in the cure of giant cell tumor. After the age of twenty-one years the power of cortical bone to ossify decreases.

In 7 tumors showing a microscopic resemblance to malignancy (osteogenic sarcoma), the histological change was found to be the result, and not the cause, of the recurrence, being dependent on intervening infection, necrosis, or an exaggerated healing reaction.

Previous operation, irradiation, partial healing, infection, invasion of the soft parts, and poor fixation modify the microscopic appearance and cause confusion in the diagnosis.

Recently it has been suggested that the typical giant cell tumor called benign may occasionally cause death by metastasis. The authors review the

reports of 8 such tumors from the literature and the surgical pathological laboratory of Johns Hopkins Hospital, Baltimore. In no case was transformation to sarcoma proved.

A nodule of typical giant cell tumor has never been found in the lung, and the association of an originally benign and typical giant cell tumor in the bone with secondary metastases of osteogenic sarcoma in the lung has never been demonstrated.

In 2 of the 8 cases of supposed metastasis of a giant cell tumor the diagnosis was incorrect as the tumor was a primary sarcoma of bone. In 2 others, the assumption of the occurrence of metastasis was erroneous and death was not due to the neoplasm.

In 4, the material from the original lesion was not saved and the nature of the primary lesion was never adequately proved. Death occurred after an interval of years from typical sarcoma, but it is possible that a slowly growing osteogenic sarcoma was present from the first or that the sarcoma arose at the site of a previous lesion that failed to heal and had been subjected to trauma or an unsuccessful operative procedure. These 8 neoplasms were the only ones among 500 giant cell tumors which were thought to have caused death by metastasis.

The osteogenic sarcoma which is most frequently confused with giant cell tumor is the chondroblastic type of sarcoma, a highly malignant type composed of primitive angular or polyhedral cells with large nuclei in reality chondroblastoma, and scanty areas of cartilaginous matrix. Giant cells may be present in this tumor, but they represent merely attempts at bone proliferation and healing which are unsuccessful because of the rapidity of the process.

The authors discuss the treatment of giant cell tumor on the basis of the results in 214 cases. They state that the tendency is increasingly toward conservatism. Amputation is rarely justified. Hardly ever is the lesion so far advanced that function can not be restored. The majority of pathological fractures will heal under proper treatment. Resection is permissible only in advanced cases and those of elderly persons with involvement of the fibula, radius, or ulna. As a rule it is needlessly radical. The treatment of choice is thorough curettage followed by cauterization with pure phenol neutralized by 95 per cent alcohol and 50 per cent zinc chloride. If desired, the electrical cautery or soldering iron may be substituted for the chemical cautery. Postoperative radium implantation is inadvisable. Roentgen therapy is less certain than curettage and does not offer the benefits of microscopic diagnosis in doubtful cases.

In the event of recurrence, little can be expected from the X-ray and less from radium. The diagnosis of the original sections should be carefully checked.

If the recurrence is a benign giant cell tumor, further curettage may be tried if the lesion is in the femur or tibia and if the patient's age and the state of the bone shell warrant it. When the recurrence develops in the radius, ulna, or humerus, resection is advisable.



If the second diagnosis is sarcoma, amputation followed by deep X ray treatment is warranted

HARRY C. SALTSTEIN, M.D.

Bucy P. C. Chondroma of the Intervertebral Disk. *J Am Med Ass* 1930, xciv, 1552

The author believes that chondromata of intervertebral disks are more common than is indicated by the reports in the literature

Of the sixteen tumors of this type on record, five arose in the cervical region, three in the thoracic region and three in the lumbar region

Bucy reports a case of chondroma low down in the lumbar region which compressed the cauda equina. Its removal resulted in almost complete relief of the symptoms. WILLIAM F. SHACKLETON, M.D.

Dittrich R. J. The Pathogenesis of Congenital Club Foot (Pes Equinovarus). An Anatomical Study. *J Bone & Joint Surg* 1930, xiii, 373

The following factors are mentioned by Aschner and Engelmann as having a possible relation to congenital abnormalities: (1) pressure of the wall of the uterus (2) active contraction of the uterus (3) general narrowness of the amnion (4) amniotic adhesion caused by inflammation (5) amniotic constriction (6) constriction by the umbilical cord (7) compression between the umbilical cord and amnion (8) extra uterine pregnancy, (9) uterine tumors (10) multiple pregnancy (11) narrowing due to pelvic tumors and (12) infectious diseases of the mother. Heredity has a definite influence in congenital anomalies.

Dittrich presents a detailed report of the autopsy findings in a baby with bilateral congenital club foot which was born in the eighth month of pregnancy. Microscopic examination of the muscles showed simple and degenerative atrophy which was most conspicuous in the peronei. In some of the muscles, hemorrhage was found but showed considerable variability in its location and extent. Small hemorrhages were discovered in all nerves examined—the tibial and common peroneal nerves on each side and the deep peroneal nerve on the right side. They were most pronounced in the right tibial and peroneal nerves.

Muscular imbalance is considered by some to be an etiological factor in club foot. Volkmann found that the primitive bundles of involved muscles of a newborn infant with club foot resemble those of an embryo of from two to four months rather than those of a full term child. Dittrich concludes that there is a close relationship between club foot and anatomical and physiological disturbances in the muscular apparatus.

The association of congenital club foot with congenital anomalies of the spine, particularly spina bifida occulta has been reported, and Peftesohn states that the majority of cases of congenital club foot show a spina bifida occulta. Beck urges that in cases of club foot showing a tendency toward recurrence an examination be made for a central di-

turbance or degenerative nerve changes with spinal defects. Steindler found spina bifida occulta in eighteen of thirty consecutive cases of congenital club foot. On the other hand, Hackenbroch found no pathological changes in seven fetuses with club foot and concluded that the disturbances are functional and not morphological. The infant described by Dittrich showed a sacral cleft, attachment of the meninges to the subcutaneous tissue mass, low position of the spinal cord with necrosis of the terminal portions an upward course of the nerve roots to reach their exits and soft tissue masses (lipomata and myonbro lipomata). The primary disturbance was therefore probably the failure of the sacral arches to develop which permitted the entrance of subcutaneous tissues into the canal and prevented ascent of the cord by adhesions of subcutaneous tissues on the meninges.

It is possible that club foot is the result of muscular imbalance of the foot brought about by dominance of the flexors invertors or supinators over their antagonists. Pathological changes in the peronei: extensor digitorum longus and tibialis anterior may be factors. Injury to the peroneal nerve may easily occur during embryonic development. Mau found peroneal nerve involvement evidenced by inward rotation of the leg at the knee, in 15 per cent of cases of club foot.

Dittrich believes that in cases in which there is a decided tendency toward relapse after correction the severity of the deformity can be attributed to involvement of the nerve roots in the lower spine brought about by fibrous bands or lipomata in the corresponding section of the cord.

REDOLPH S. REICH, M.D.

Beertsen A. Hallux Valgus. A Contribution on Its Etiology and Treatment. (Del hallux valgus. Contribution à son étiologie et à son traitement). *Rev d'orthop*, 1930, xxvii, 101

Hallux valgus has been believed by some among them Ewald to be hereditary. Sandelin is of the opinion that in 54 per cent of cases it may be found in other members of the patient's family. According to Joachimsthal it is congenital. It has been attributed by some to shoes with too narrow toes, too short shoes and flat foot. Ewald sought the cause in obliquity of the articular line between the first metatarsal and first cuneiform bones which forces the metatarsal into abduction. Volkmann regarded the condition as a consequence of arthritis deformans. In the opinion of most surgeons it is seldom congenital.

It usually develops at about the fourteenth year of age and is more common in females than in males. Of the author's fifty two patients, forty eight were women. Beertsen calls attention to the fact that the condition is not always associated with flat foot. He believes we must look for the cause in the skeleton of the foot or in laxity of tendons and ligaments. He examined 202 roentgenograms made at an orthopedic clinic. Finding it

impossible to account for the absence of hallux valgus when the accepted causes were present, be concluded that the condition must be the result of several concurrent causes, internal and external, variously combined.

Berntsen's report is based on the cases of 50 patients whose subsequent history was followed—46 women with 83 operations and 4 men with 7 operations. Seventy-three of the 90 operations yielded satisfactory objective results and 73 yielded satisfactory subjective results. When the result was good objectively it was sometimes poor subjectively. The best results were obtained by radical operation with resection of the head of the meta-tarsal, ablation of the sesamoid bones and displacement of the tendons. After operation the patient should wear a support moulded on the plantar arch. Pes cavus and arthritis deformans are contra-indications to operation. FLORENCE A. CARPENTER

Quénu and Stofanovitch. Ruptures of the Tendon of Achilles (Les ruptures du tendon d'Achille). *Rev. de chir.*, Par., 1929, XLVIII, 647.

Following a review of the literature on subcutaneous rupture of the tendon of Achilles, the authors report two cases. In the first case a complete rupture of the left tendon of Achilles was sutured on the second day with a perfect result. Twenty-eight months after the operation the patient considered the function of his left leg as good as that of his right leg. He was able to play tennis, ride a bicycle, stand on tiptoes on his left foot, and even jump on his toes. In the second case a complete rupture of the right tendon of Achilles which had occurred a month previously was sutured with a perfect result. In this instance the sheath of the tendon was intact.

There are three ways in which the tendon may be divided. It may be severed by a cutting instrument or projectile, broken by a sudden and powerful contraction of the sural triceps muscle, or separated by an external traumatism without division of the soft tissues. Its severance by a cutting instrument or projectile is more properly a wound or resection than a rupture.

Rupture of the tendon of Achilles is a rare accident, especially in women. Of the series of sixty-eight cases collected by the authors, only five were those of women. In children and aged persons the injury is unknown. It occurs most frequently between the ages of thirty and fifty years. Of the patients whose cases are reviewed by the authors the youngest was nineteen years and the oldest sixty years. The subject of such an injury may be corpulent, but is usually vigorous, muscular, and athletic—often a professional athlete.

Whatever the causal accident, the rupture occurs when the Achilles is stiffened by contraction of the sural triceps muscle. The cause may be direct or indirect. When it is direct, which is rare (the authors found a direct cause in only four of fifty-eight cases), the region of the Achilles tendon is the site of an

external traumatism, either a blow strikes the immobile leg at the tendon or the postero-inferior part of the leg strikes against an immobile object in the course of a fall or a violent movement. Ruptures of indirect cause (much more frequent) are produced by a sudden and energetic contraction of the sural triceps to propel the body, break a fall on the points of the toes, or re-establish equilibrium. The intensity of the force exerted may not be responsible alone as the angle of application of the force often plays a part.

Occasionally a rupture of the Achilles tendon takes place without evident cause. The unusual fragility of the tendon in such cases has been ascribed to syphilis. Of five cases of rupture without apparent cause which were studied by the authors, evidence of syphilis was found in three.

In sixty-seven of the sixty-eight cases of rupture of the tendon of Achilles which form the basis of this study, the rupture was unilateral in sixty-seven. Of the twenty cases in which the side of the rupture was recorded, it was the right side in twenty. Of the thirty-two cases in which the location of the rupture was recorded exactly (nine of which were operated upon), the rupture occurred from 2 to 7 cm. above the calcaneal insertion. In all of the cases the rupture was complete and the ends of the tendon were separated. The amount of separation depends chiefly on the condition of the aponeurotic sheath of the tendon to which the tendon adheres closely. If the sheath is not broken at the same time as the tendon, it limits the ascent of the upper end. In some untreated cases, functional recovery has occurred, but in others the ends of the tendon have healed separately.

The physiology of the parts is discussed. Silent ruptures of the tendon of Achilles are exceptional. At the moment of the accident the subject usually hears a cracking sound, feels a severe, clearly localized pain, and falls. The functional impotence immediately following the rupture varies extremely.

For examination, the patient should kneel on a table or chair with the feet over the edge. Active movements of flexion and extension are limited and painful. Flexion is possible and energetic, but limited by pain. Extension is much less vigorous on the affected side. The principal sign, nearly always present, is a depression above the heel. At the end of a certain length of time, ecchymosis and oedema appear. An untreated rupture of the Achilles tendon may leave a considerable infirmity.

The only lesion which may lead to error in the diagnosis is a fracture of the posterosuperior angle of the calcaneum, but in this condition the fragment is generally higher and the depression is very low and limited by two ends of bone. A roentgenogram will remove all doubt. Roentgenography will also confirm the diagnosis of rupture of the Achilles tendon.

An incomplete rupture of the Achilles tendon has never been found at operation. Of fifteen cases treated by non-surgical methods, the result was poor.

in nine and good in six. Of twenty nine cases treated surgically a good result was obtained in twenty eight. For rapidity and constancy of results the open surgical treatment is far superior to non operative measures. In direct rupture with a contused wound and the possibility of infection, operation may be delayed until the wound has healed.

The operation indicated consists in finding the two ends of the tendon freshening the edges and bringing them together. The suturing is done with one or two non absorbable sutures and completed with fine catgut. The authors use the LeDentu procedure. They advise keeping the foot in extension on a Boeckel splint for three days. Slight movements of flexion and extension may then be encouraged. In most cases, walking should be forbidden for eight or ten days and in the cases of obese subjects and cases of old ruptures, for a longer period.

The article is supplemented by a bibliography.  
FACE

### SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

**Imbert L.** Histological Researches on the Evolution of the Bone Graft (*Recherches histologiques sur l'évolution de la greffe osseuse*) *Ann d anat path* 1930 VII 291

A bone graft enclosed in the soft tissues may persist indefinitely or may be absorbed. When it persists it is a sequestrum a foreign body. Its substance is of no use to the body which even refuses to absorb it. It is unable to excite the formation of new bone.

When the graft is absorbed it is able, though dead in appearance to give rise to a vital process—even, very often to an ephemeral new formation of bone. Absorption attacks not only the graft, but also in many cases a fragment of living bone. On the other hand the new bone formation takes place around both the dead graft and the living bone. Bony continuity is re established by a double mechanism. The first process resembles the consolidation of an ordinary fracture, but in parts of the bone the cells lose their nuclei. On the fractured surfaces of the graft and the living bone layers of bone with living cells appear. On the living bone they are abundant on the graft they are few and thin. When they meet and fuse with the intermediary peripheral bone already formed, union results which permits the periosteal bone to disappear.

Curious phenomena occur in the graft, with its apparently dead cells and on the living bone, which contains a large number of plaques of dead bone and zones of absorption. The essential part in the making over of the graft is the widening of the haversian canals with consequent disappearance of the dead cells and the reconstruction of living new bone, which restores the enlarged haversian canals to their normal dimensions. This process goes on in

all parts but not simultaneously a fact explaining why a graft examined at this stage shows areas of both dead and living bone. When the process is finished repair is complete. Repair is the result of a sort of antagonism between destructive rarefaction and bone reconstruction. Where bone is enclosed in soft tissues and destined to be absorbed, destruction is more marked than reconstruction.

To show the histological changes, the author presents six schematic drawings of cross sections of a graft in the process of transformation. Around each there is a circle of living bone cells which are nourished by inhibition. The first picture shows compact tissue with empty cells, the second the haversian canals enlarged by absorption and the third, the development of endogenous living tissue in and around some of the enlarged canals and continued absorption of other canals. In the specimen shown in the fourth and fifth pictures the bone is again compact with the canals of normal size, but it differs from the bone shown in the first picture in that the tissue is composed almost exclusively of living cells. The article contains numerous photomicrographs and is supplemented by a bibliography of the author's writings on the subject.

FLORENCE A. CARPENTER

**Rosen L. A.** Treatment of Articular Tuberculosis. Oleo Arthritis (Traitement de la tuberculose articulaire 'Oleo arthritis') *Rev de chir Par*, 1930 XLVII 723

In the treatment of articular tuberculosis the diet indicated for tuberculosis must be given the joint placed at rest, the infection in the synovial membrane overcome, and the normal mechanical relations between the articular surfaces re established.

After experiments to determine the effect of paraffin oil and vaseline oil on animals, the author used these substances for the treatment of tuberculous arthritis, ulcers, septic and diphtheritic suppurating wounds, and other lesions in man. He found them more effective than other antiseptics including rivanol and Dakin's solution.

Rosen reports two typical cases of tuberculous arthritis in which vaseline therapy gave excellent results. One was that of a woman twenty seven years of age who had undergone several unsuccessful courses of treatment for swelling of the left knee which had been present ever since she had struck the knee two years previously. She was anæmic but of average weight. Examination showed the left thigh to be conical and much thinner than the right thigh. The left patella was floating and the left leg, knee and plantar surface were oedematous. The patient complained of pain, weakness, inability to sleep, vertigo, anorexia, constipation, and intermittent fever. Her urine contained albumin.

Puncture of the joint evacuated about 600 c cm of characteristic fluid. Following an injection of iodoform emulsion, the pain was somewhat relieved at first, but after 3 injections and the use of

light baths the condition became much worse the weakness increased, the fever became constant and the urine showed a 5 per cent content of albumin and solitary hyalin cylinders. After a second puncture, which evacuated 500 c cm of pus from the articular cavity, 100 c cm of vaseline oil were injected and the leg was bandaged and elevated. Calcium therapy was then begun. Two weeks later the patient was able to sleep all night, her appetite had improved, the fever had subsided completely, diuresis had increased  $1\frac{1}{2}$  times, the albuminuria had decreased, and the urine was free from cylindroids.

After a third puncture, in which 300 c cm of a sero oily fluid were withdrawn, 100 c cm of vaseline oil were injected and treatment with dry heat and light baths was given. In the fifth week the patient's color was better, her strength had increased and her sleep, appetite, and intestinal function were almost normal.

At a fourth puncture, 100 c cm of cloudy sero-oily fluid were withdrawn and 40 c cm of vaseline oil were introduced with difficulty. In the ninth week a puncture evacuated only 2 c cm of almost pure oil, and, at the end, blood. Exploration of the joint and passive flexion were almost painless, diuresis had increased from 2 to  $3\frac{1}{2}$  times, and the albuminuria had disappeared. A plaster apparatus was then applied and the patient told to walk with crutches. In the eleventh week she was able to walk with a crutch all day. Six months later she was well and working. The result in the other case was similar.

The author distinguishes 3 clinical stages of articular tuberculosis. In the first or toxic stage there is slight fatigue with sometimes indefinite poor health, but no clinically or roentgenologically evident change in the joint. In the second stage there is a serous or purulent exudate, and clinical and roentgenological examinations reveal joint changes. In the third stage there is a typical fungus of the joint, and all of the clinical characteristics of tuberculosis are apparent.

In the toxic stage, vaseline oil reduces the pain by separating the more or less mobile parts of the joint and covering the diseased synovial membrane with a layer which is impermeable to the anaerobic bacillus. The author reports several severe and complicated cases of primary synovitis and acute tuberculous arthritis. Of hundreds of cases in which oil injections were made after the withdrawal of fluid, acute suppuration of the joint occurred in only 1. In the latter, which is reported in detail systematic oleo arthritis combined with calcium therapy resulted ultimately in almost complete restitution of function of the joint.

Rosen reports, in addition, 2 cases illustrating the results of oleotherapy in an early stage of the process. He calls attention to the fact that as the treatment is harmless it may be used in very early cases in which the basis of the condition is not yet quite clear.

The granulating proliferative stage of articular tuberculosis also responds to oil treatment and calcium therapy. Two illustrative cases are reported. Because of the very slow course of the polymorphic process the treatment must be continued for a considerable length of time.

Oleotherapy is satisfactory in suppurative forms of articular tuberculosis, osseous forms, those in which the joint is semi mobile, those in which the soft tissues are involved by infiltrations and congestive abscesses, fistulous forms, and processes of an ankylopoietic character. In a case with the diagnosis of arthritis cubiti sin phlegmonosa, oedema humeri indurativum, septicopyæmia chronica, nephritis toxica, the author obtained excellent results from calcium therapy and the injection of vaseline oil. He states that treatment with paraffin oil or vaseline oil is of value in all forms of articular tuberculosis, regardless of the patient's age or general condition or the presence of associated disease. He describes the technique of the injection in detail.

In prolonged calcium therapy the author administers finely powdered egg shell by the spoonful. He supplements this by calcium enemata given every second day or, in severe cases, every day, and continued for from ten to twelve weeks with intermissions of two or three days after each fifteen days.

PAGE

Brackett E G. The Treatment of Disabilities Resulting from Low Back Derangements. *J Bone & Joint Surg*, 1930, xii, 325.

Since the importance of the sacro iliac joint in back derangements has been realized, the related function of the lumbosacral joint has become evident and has complicated the differential diagnosis.

Besides derangements due to joint disease, there is a type due to joint strain with only slight or no displacement.

Cases in which the joints are abnormally formed differ in their prognosis and indications for treatment from cases of simple strain of normally formed joints. Variations of structure may or may not be associated with weakness. Such variations can be detected satisfactorily only by roentgen examination. Sacralization of the fifth lumbar vertebra is not responsible for a tendency toward displacement of the lumbosacral or sacro iliac joints. The horizontal sacrum places the line of gravity anterior to the sacro iliac joint thus resulting in an increased shearing force at the lumbosacral joint and an augmented rotating force at the sacro iliac joint. Irregular and asymmetrical lumbosacral articulations always present a departure from the normal and are a positive factor of weakness. Defects of the articular facets and the supporting position of the laminae increase the tendency of the fifth lumbar vertebra to rotate by shearing forward on one side. When they are combined with a horizontal sacrum, this vicious force is exaggerated.

In the study of low back derangements the anatomy and function of three joints must be considered.

collectively. In an effort to localize the injury, the complex result of trauma must be realized. In the sacro iliac joints the capacity for resistance is lessened because motion is slight. Repeated stress will tend toward gradual yielding and the development of a chronic derangement.

WALTER P. BLOUNT, M.D.

Schmieden. Surgery of the Vertebral Column  
(Chirurgie der Wirbelsäule). 54. Tag a. deutsch.  
Ges. f. Chir., Berlin 1930.

The author classifies spinal column conditions as follows:

A. Injuries (1) fractures of the vertebrae (2) Kummell's disease (3) luxations of the vertebrae (4) gunshot injuries and (5) puncture wounds.

B. Diseases (1) tuberculosis (2) osteomyelitis, (3) infectious spondylitis, (4) scoliosis, (5) tumors and (6) echinococcal infection.

C. Malformations (1) spina bifida (2) sacralization of the fifth lumbar vertebra, (3) osseous lumbago and (4) spondylolisthesis.

He discusses only a few of these conditions taking up first the treatment of fractures of the vertebrae. His remarks are based on the literature, his own material, and the replies to a questionnaire. The objects of treatment of vertebral fractures are reestablishment of the supportive solidity of the spinal column and restoration of the spinal canal. In efforts made to attain the latter objective the advisability of laminectomy to relieve the spinal cord from pressure must be considered. Emergency and minor hospitals in general reject this procedure but some surgeons consider it justifiable, being unwilling to regard all cases of paraplegia as entirely hopeless.

The anticipation that the roentgenogram would be decisive in the solution of the problem has not been fulfilled although the stereoroentgenogram gives a very distinct picture of the injury. This is explained by the fact that vertebral fractures with marked displacement of the fragments may not be associated with paralysis whereas paralysis sometimes occurs after fractures with scarcely any displacement. At any rate early operation is contra indicated.

In the first stage the treatment should be expectant and myelography is of aid. When myelography shows that the spinal canal is unobstructed operation is contra indicated. When obstruction is found surgical treatment may be considered even when the exact nature of the condition present is not known. Enderlen recommends that operation be delayed for three weeks after the injury. Schmieden believes that three weeks is the minimal amount of time that should elapse before surgical intervention. In the interim the neurologist should separate the hopeless from the hopeful cases. Hopeless cases are those presenting total paralysis without any evidence of improvement after the injury whereas hopeful cases are those in which an incomplete paralysis shows no signs of increasing or from time

to time shows improvement. There are assuredly cases in which operation is beneficial. While the incidence of good results has been low in the past it will be increased when the indications for operative intervention are established more definitely. The author believes that in some instances operation is the procedure of choice. However, he emphasizes that in no case should it be considered early.

Before concluding his discussion of vertebral fractures Schmieden briefly reviews the history of their treatment. The first laminectomy for vertebral fracture was done by MacLean in 1814 although two hundred years previously Heister wrote that in certain cases operative intervention is justifiable if not imperative. Section of the spinal cord which is often required in cases of paralysis sitting in with severe pain is merely mentioned by Schmieden. For restoration of the supportive function of the vertebral column the Henle Albee operation is recommended. Of the surgeons replying to Schmieden's questionnaire, 23 stated that they approved of this procedure. However, of 3,014 cases it was carried out in only 50. Difficulty is experienced in the establishment of the indications. The author believes that the operation is warranted only for true insufficiency in the late stages.

Kummell's disease has been ascribed by some to too early burdening of the injured spine and by others to too long continued protection of it. Of the surgeons replying to Schmieden's questionnaire, 38 accept and 18 reject the theory that the condition is a pathological entity. Twenty eight, including Magnus, stated that they had never observed the disease. Schmieden regards it as a definite syndrome.

Statistics are given also at the conclusion of the author's discussion of this topic. Of 3,014 cases of vertebral fracture operation was done in only 10 per cent. The various types of fracture are shown in a large number of roentgenograms.

Luxations of the cervical vertebrae are discussed briefly. Schmieden reports a case in which he obtained a cure by the Henle Albee operation. He states that in transverse fractures of the transverse process extirpation of the broken off fragment is sometimes indicated. When laminectomy is under taken probing may be required. Occasionally, rotation of the cord must be done. In fractures of the transverse process the incidence of cure is 100 per cent whereas in fractures of the vertebral arch it is 30 per cent and the mortality is 43 per cent.

The next subject taken up in any detail is tuberculous spondylitis. The total mortality in this condition is about 30 per cent, and is not much decreased by operation. A distinction must be made between direct operative methods, which attack the disease focus, and indirect methods such as the Henle Albee operation. Radical removal of the disease focus is difficult. The sharp curette generally employed sometimes does not remove all of the diseased tissue and often removes healthy tissue. While complete removal of the focus is occasionally pos-

sible in the vertebral arch, a focus in the body of the vertebra is not only inaccessible but difficult to recognize.

Of 9,087 cases, the focus was attacked directly in only 68. In general it is advisable to wait until the focus lies directly under the skin. In fact, an expectant attitude is indicated in all cases except those in which the focus is situated in a spinous process or the vertebral arch and those in which a retropharyngeal abscess develops. A retropharyngeal abscess should be opened as early as possible, preferably from the side of the neck. A good approach to the posterior portion is offered by the costo-transversectomy of Heidenham. However, the end results vary greatly. A special position is occupied by the malum suboccipitale of Payr. The best results in tuberculous spondylitis are obtained, not by operation, but by the heliotherapeutic procedures and supplementary measures employed by Bernard and Rollier at high altitudes and by Bier in the lowlands. In spondylitis which begins with paralysis, laminectomy is not indicated. When the spinal canal is opened or an operation is performed for the correction of a gibbus the last support is removed. The theory that the gibbus produces a sharp angulation of the spinal canal is erroneous. The paralysis is caused by abscesses which have broken through into the spinal canal, by granulations developing within the canal, or by collateral oedema, which usually cannot be removed at operation. Occasionally associated factors are sequestra, cicatrices and pachymeningitis. In the performance of a laminectomy it is important to avoid opening the dura. Of 251 laminectomies, the dura was opened in 43, and of the latter, 26 were followed by death. The incidence of cure in spondylitis treated by laminectomy is 14 per cent and the mortality 30 per cent. The author is becoming more and more conservative.

The indirect Henle-Albee operation has ardent proponents and equally ardent antagonists. Of 76 surgeons replying to Schmieden's questionnaire regarding this operation, 8 recommended it, 38 stated that they perform it in certain cases, 13 opposed it, and 17 stated that they are not interested in it. Of 600 cases in which the operation was performed, the implant was cast off in 35. In a number of cases infection leading to meningitis,iliary tuberculosis, and other sequelae developed. The majority of surgeons are opposed to the operation in the cases of children. It should be performed only in the late stages of the condition when the virulence of the infection has become attenuated. Forcible correction of the gibbus is contra-indicated. Indeed it is questionable whether the development of the gibbus should be hindered by operation. The contra-indications to the Henle-Albee operation include a poor general condition and the presence of paralysis. Mild spasms are not a contra-indication. At the present time, social conditions cannot be considered an indication. Of 6,045 patients subjected to the Henle-Albee operation, 119 were not obliged to

wear a corset. The author's discussion of this topic also is supplemented by statistics.

Schmieden next takes up a few of the malformations of the vertebral column, discussing first osseous lumbago. He says that despite the congenital nature of this condition, the symptoms often do not develop until the second decade of life or even later. He believes that the symptoms are induced by the small traumata of daily life. The lumbosacral and iliosacral articulations are those chiefly involved. Inflammatory processes develop in the affected parts.

Sacralization of the fifth lumbar vertebra is due to the upright position of the body. When the sacralized transverse process causes very severe pain its extirpation is indicated. Its extirpation is an exceedingly difficult operation as it must be carried out at a great depth.

The malformation of the spine which has received most study in Germany is spodylolisthesis. For this condition an immobilizing operation is recommended. Of 17 cases which were treated surgically the operation was followed by a cure in 11, improvement in 4 and recurrence in 2.

Gunshot wounds osteomyelitis, and echinococcus infection of the spine are discussed rather briefly.

STETTINER (Z)

#### Albee, F. H. Extra-Articular Arthrodesis of the Hip by Bone Graft for Tuberculosis of the Hip *Am J Surg* 1930 viii, 764

Extra articular arthrodesis by bone grafting is indicated in tuberculosis of the hip when there is constant recurrence of the adduction deformity after conservative treatment, when the adduction recurs following Gant's osteotomy, when there is marked destruction of the femoral head or the acetabulum, or both, and when, in the cases of adults or older children, symptoms of active tuberculosis are noted.

In cases with very little change in the relations of the hip joint, two grafts from the tibia form a more satisfactory bridge than one graft from the femur. If sufficient destruction of bone has occurred to allow the trochanter to approach the ilium, a graft from the trochanter and the shaft of the femur may be rotated upward on a muscular pedicle and the free end embedded under a flap of ilium. In neither procedure will bone ligatures be necessary if the grafts are accurately fitted, an important advantage when the osteogenic power is reduced by tuberculosis. When the trochanter has become closely approximated to the ilium a sliding bone graft from the ilium is satisfactory. When the bones impinge, it may be possible to mortise them together. On the whole, however, the tibial graft is preferable because it is stronger and more accessible and can be removed with little shock from incision of muscles or trauma to the joint. The use of two tibial grafts applies the principle of the truss of structural mechanics and furnishes more support than a single graft. It is of advantage also when an arthroplasty is to be done in the future.

WALTER P. BLOUNT, M.D.

Cole W H Bony Fixation of the Foot in Infantile Paralysis Subastragal Arthrodesis *J Bone & Joint Surg*, 1930 xii 289

Arthrodesing operations on the foot are indicated in infantile paralysis not only for fixation but also for proper arrangement of the elements of the foot and proper placing of the foot in relation to the leg. The deformity is corrected with the foot in the normal position. The normal lateral muscles should be transplanted either to the Achilles tendon and os calcis or forward to the front of the foot, depending upon the distribution of the paralysis.

The author classifies arthrodesing operations as follows:

1 The Hoke operation. This is a rather highly refined 2 joint procedure in which the attempt is made to reshape the astragalus and restore the midtarsal region and the proper relationship of the os calcis to the astragalus and leg by excision of the true subastragal joint.

2 The 3 joint operation in which arthrodesis of the astragalocalcaneal, astragaloscaphoid, and calcaneocuboid joints is done, the entire foot displaced backward and lateral instability corrected. In Ryerson's triple arthrodesis the 3 joints are attacked through lateral incisions and when necessary the arthrodesis is performed anterior to the midtarsal joint.

3 Dunn's operation. In this procedure a wedge is removed from the midtarsal region and the astragalocalcaneal joint in much the same way as in the 3 joint procedure.

Two joint arthrodeses are similar to 3 joint arthrodeses except that the calcaneocuboid joint is not attacked. In rare cases the panastragaloid arthrodesis described by Albee and Steindler may be indicated. Although there are many different types of arthrodesing operations, the principles laid down by Davis underlie all of them and the 3 joint procedure may be the basis of the treatment of most feet requiring arthrodesis.

Cole reviews the results of 224 subastragal arthrodeses. Thirty four of the operations were of the Hoke type, 80 of the 2 joint type and 110 of the 3 joint type. Eleven feet were reoperated upon to improve position. The results ranged from good to excellent in 209 cases (91 per cent), and from poor to fair in 20.

The most favorable time for arthrodesis is after the fifteenth year, but Cole reports 2 cases in which the operation was done with good results at the age of six and a half years. Bony union was obtained in the subastragal joint in all but 2 of the cases reviewed. No case was operated upon until at least two years after the acute attack and after proper preliminary treatment had been given.

The failures were due to improper or insufficient operation, including failure to obtain correct posterior dislocation, balance the remaining muscle power, or remove wedges of sufficient size to correct the existing deformities. In some cases braces were fitted.

RUDOLPH S REICH, M D

## FRACTURES AND DISLOCATIONS

Soutter R Reduction of Fractures and Dislocations of the Long Bones. An Apparatus for Obtaining General Relaxation of the Soft Parts. *J Am Med Ass*, 1930 xciv, 1547

Relaxation of the muscles by the gradual and rhythmic application of traction which may be instantly increased or decreased will often permit the easy reduction of a fracture or dislocation that otherwise would be difficult to reduce. The technique consists in the application of gradually increased measured force followed by a short period of relaxation and the repeated application of greater force if reduction is impossible in the relaxation period which usually lasts from five to seven minutes before muscle tone is regained. The apparatus used by the author consists of a tubular steel rod made in several sections which fit together. The rod as assembled is 80 in long. It is bent at a right angle at one end and has a hook at each end. Two webbing straps are used, one for traction on the injured limb at the bent end of the rod and the other for counter traction on the patient's body at the other end. Double block pulleys with a 100 lb spring balance connect the injured part to the rod so that a comparatively light pull on the pulley rope will exert any amount of traction and the exact amount is instantly measured on the balance. The method of applying the apparatus to difficult fractures is described in detail with illustrations.

In most arm fractures pulls of from 10 to 20 lb for from ten to twenty minutes, repeated once after a period of relaxation, will usually permit easy reduction. For most hip fractures pulls of from 10 to 15 lb made at three minute intervals and increased up to 40 or 50 lb, depending on the patient's physique, are usually necessary. When reduction is accomplished, the apparatus will maintain the position while immobilizing dressings are applied. The importance of padding the skin at the site of traction is emphasized.

CHESTER C. GUY, M D

Mora J M, and Willis D A Reduction of Simple Fractures of the Extremities under Local Anesthesia. *Am J Surg* 1930, viii 1062

The authors discuss the comparative ease and safety with which simple fractures of the extremities can be reduced under local infiltration anesthesia. This type of anesthesia is of value when general anesthesia is contra indicated, as in senility, advanced cardiac and renal disease, hypertension, pulmonary lesions, and cases of skull injury with fracture of an extremity. The contra indications to its use are compound fractures, infection and trauma of the skin, and infection elsewhere in the limb.

The anesthesia is induced by the injection of from 5 to 50 c cm of 1 per cent novocain with adrenalin into the hematoma between and around the fragments, under precautions for sterility. While there is danger of introducing infection from within, out, no such complication has been recorded.

Gradojévitsh, B. A Case of Dorsal Luxation of the Upper End of the Metacarpal Bones (Un cas de luxation dorsale de l'extrémité supérieure des métacarpiens) *Rev d'orthop*, 1930, xxxvii, 132

The case reported was that of a man thirty-six years of age who was struck violently on the palmar surface of the wrist by a piece of wood. At the time the blow was received the fist was closed. The injury was followed by severe pain, swelling and deformity of the wrist, inability to move the fingers and deformity and discoloration of the hand. The index finger and thumb were shortened, and all of the fingers were semiflexed. Palpation revealed an elevation on the dorsal part of the carpal on the radial side. Pressure at this point provoked pain. Roentgenography revealed a small fracture in the extremity of the third metacarpal and dislocation of the second and third metacarpals posterior to the trapezoid, trapezium, and the upper end of the thumb. Lateral exposure showed posterior overlapping of the second and third metacarpals on the carpal with the upper ends of these bones on a level with the lower end of the scaphoid.

While his assistant held the elbow flexed at a right angle, the author drew the index finger and thumb forcibly in the direction of the axis of the

forearm. The snap of replacement was audible. Reduction was completed by digital pressure on the dorsal part of the second and third metacarpals. The forearm was then immobilized for ten days by a dorsal splint exerting pressure on the dorsal part of the wrist. The fingers were left free.

When the splint was removed, active movements were less painful, passive movements were nearly complete, and the roentgenogram showed the reposition to be satisfactory. Treatment with massage and mobilization was continued for six weeks. The patient returned to work at the end of three months.

FLORENCE A. CARPENTER

Simon, R., and Stulz, E. Operative Treatment of Compression Fractures of the Calcaneus. *Ann Surg*, 1930, xci, 731

The authors report eight cases of fracture of the calcaneus which were treated by open operation. They emphasize the importance of obtaining correct apposition of the articular surfaces of the astragalocalcaneal joint by lifting the thalamus, repairing the articular surface and fixing the fragments in proper position. If this is impossible, arthrodesis is indicated, and in exceptional cases astragalectomy may be advisable. ELLEN J. BERANEISER, M.D.



# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD VESSELS

Wright A. D. The Treatment of Varicose Ulcer  
*Proc Roy Soc Med Lond* 1930 xxv 1932

The author describes the occlusion method used by him which has given very good results. The oldest method of strapping—strapping of the margins of the wound—was devised by Beck. Its objects were

- 1 To save granulations and epithelium from trauma at the healing edge
- 2 To keep excessive granulations in check and thereby allow new epithelium to grow in
- 3 To allow the drainage of discharge
- 4 To allow the center of the ulcer to be dressed

However it was found that strapping had very little effect on varicose ulcers until a considerable degree of compression was added. Its results were then miraculous. Compression is of advantage for the following reasons

- 1 It abolishes the varicose circulation
- 2 It diminishes the oedema
- 3 By reducing the girth of the leg, it reduces the width of the ulcer and approximates the edges of the lesion
- 4 It protects new epithelium and delicate granulations from dressing trauma. The discharge lifts the sticking plaster away from the ulcer and renders removal painless and harmless to the epithelium and granulations
- 5 It presses down and softens the raised margins of an indurated ulcer thereby rendering it flat instead of excavated
- 6 It keeps the wound dressed with its own discharge the pansement spécifique of Besredka
- 7 It abolishes pain in a great majority of cases
- 8 It permits full functional activity. Patients who work and take exercise are cured more quickly than those remaining in bed
- 9 It saves the expense of dressings and lotions
- 10 In early ulcers there are numerous invisible islets of epithelium buried in the granulations. Pressure brings these to the surface and they quickly cover the ulcer
- 11 It cleans the ulcer more quickly than any antiseptic method and quickly abolishes the odor
- 12 It brings to the surface varicose veins which were deeply buried in oedema thus rendering possible injections which otherwise could not be attempted
- 13 It gives a supple scar which loses its adherence to the underlying bones

In the technique used by the author, adhesive plaster is wound very tightly around the leg with a pressure proportionate to the amount of induration and oedema present. This is done at weekly inter-

vals. Whenever the plaster is removed visible veins are injected. In many cases the injections cannot be given until the compression has disclosed the veins. When the ulcer has healed the injections must generally be continued until all of the veins are thrombosed. When the oedema has completely subsided a gelatine stocking is applied for a varying length of time until the leg loses its tendency to swell.

By this method any ulcer can be cured at the rate of 1 sq in per week. All pain is relieved. Full work and exercise are possible. The chance of recurrence is usually eliminated. The slightest tendency toward recurrence is immediately checked by strapping.

SAMUEL KAIN, MD

Silbert S. Thrombo Angilitis Obliterans (Buerger)  
*J Am M Ass*, 1930 xxv 1730

Of 460 patients with untreated thrombo angitis obliterans, 64 per cent had an amputation of 1 extremity during the first five years of the illness and 46 per cent an amputation of a second extremity during the first ten years.

The results obtained in 225 cases of typical thrombo angitis obliterans and 64 borderline cases of the condition which were treated with intravenous injections of hypertonic salt solution indicate that this method of treatment is effective and safe. Eighty four per cent of the patients have shown symptomatic improvement and 67 per cent have been able to return to work. Sixty four per cent of all ulcers have been healed. Amputation was necessary in only 8.3 per cent of the cases. For satisfactory results the patient must refrain from using tobacco.

W. N. ROWLEY MD

Leriche R. and Stricker P. Anatomoclinical Records of Vascular Surgery (Documents anatomocliniques de chirurgie vasculaire) Lyon chir., 1930, xxvii 137

The authors report nineteen cases of vascular surgery, nearly all of which were cases of arteritis with or without gangrene.

In the first case that of a man aged fifty six years resection of the left brachial artery was done for arteritis. Nine days later the hand had regained its normal color. Fifteen days after the patient left the hospital he resumed his trade as a printer and was able to use his left hand almost as well as before the development of the disease. Thirteen months after the operation he was working regularly. The left hand was still a little colder than the right but retained its strength.

The second case was that of a chauffeur twenty seven years of age who had had circulatory disturbances in the right leg since an attack of measles five years previously. A right perifleural sympathectomy

tomy had been done and the fifth toe on the right foot had been amputated. There was no pain until four years after the sympathectomy. Resection of 3 cm of the external iliac artery was then performed. Soon after this operation the patient was able to resume his work, and fifteen months later was in satisfactory condition.

The third case was that of a man aged thirty six years who suddenly experienced pain in the left shoulder, then in the head and then in the right shoulder while sitting fishing with his feet in the water. The condition was at first diagnosed as Raynaud's disease. Leriche did a low cervical ramisection. Eight days after the operation the patient left the hospital and resumed his work. Two and a half months later a periarterial sympathectomy 5 cm in length was done on the right brachial artery. Eight months after the first operation the obliterated portion of the brachial artery was resected. Twenty six months after this operation the patient was well and working as a packer. There was no atrophy of the right arm, but the right hand was slightly more cyanosed and a little redder than the left.

In the fourth case, that of a man aged twenty four years, resection of a segment of the femoral artery was performed because of contusion. When the patient was re-examined thirteen months after the operation he said he had been working without interruption, but that claudication occurred every 400 to 500 meters.

In the fifth case, that of a man twenty six years old, resection of the brachial artery was done for extensive obliteration of that vessel. The result being unsuccessful amputation was done.

The sixth case was that of a man forty five years old who was treated for obliterating arteritis of the left leg with beginning gangrene of the great toe. Lumbar ramisection and popliteal arterectomy were followed by temporary improvement but amputation at the thigh became necessary.

In the seventh case there was the syndrome of arterial obliteration high up in the lower limb. That patient was a man twenty four years of age. Multiple periarterial sympathectomies were followed by considerable improvement.

In the eighth case, the patient, a man thirty-one years of age, had obliterating arteritis of the subclavian artery and circulatory disturbances of the lower limb, probably Buerger's disease. Sympathectomy was followed by improvement.

In the ninth case a double femoral sympathectomy was performed for pain and vascular crises in the lower limbs of a sixty-year old man with arteriosclerosis. A year later the patient was well, but said that the left leg and foot were somewhat oedematous in the evening. The oscillometric findings were better than a year before. The oedema was relieved by a series of injections of acetylcholine.

In the tenth case a perifemoral sympathectomy was done on the left leg of a man forty six years old for threatened gangrene. Previously, amputation of the right thigh had been done for gangrene. Seven

months after the sympathectomy the patient remained cured.

In the eleventh case, that of a man sixty five years of age, a perifemoral sympathectomy cured intermittent claudication. At the end of three years, the symptoms developed on the other side and resection of an obliterated segment of the femoral artery was done. The immediate results were good, but it is still too early to report the end results.

The twelfth case was one of gangrene of the fingers from streptococcal infection following a felon. The patient was a woman thirty five years old. The arterial circulation was intact when explored clinically. Amputation was done at the forearm. Brachial sympathectomy was performed for the purpose of mobilizing the elbow, but the result was not successful.

In the thirteenth case, that of a man fifty two years old, there was symmetrical gangrene of both legs with preservation of arterial permeability as far as the ankle. Amputation was done at the thigh.

The fourteenth case was that of a man seventy two years old with gangrene of the toes of the left foot. Amputation was done at the thigh. Intra arterial injection of lipiodol into the specimen showed localized obliteration at the left femoral artery with conservation of permeability of the arteries of the leg and of the foot as far as the toes. The treatment given was not indicated.

In the fifteenth case both legs were amputated on account of gangrene of the foot from freezing three weeks previously. The patient was a man thirty eight years old. Intra arterial injection of the amputated limbs showed permeability of the finest arterioles of the feet.

In the sixteenth case, that of a man seventy one years old, perifemoral sympathectomy was done for diabetic gangrene but was unsuccessful. The posterior tibial artery was obliterated. The anterior tibial artery was permeable.

The seventeenth case was that of a man sixty seven years of age who was suffering from arteriosclerosis and developed gangrene of the foot. The popliteal artery and the termination of the femoral artery were obliterated by recently formed thrombi, and a very tight stricture was present in the anterior tibial artery and the proximal part of the posterior tibial artery. The circulation of the foot was maintained by the peroneal artery and the lower portion of the posterior tibial artery. Amputation was followed by death.

In the eighteenth case, a traumatic arteriovenous fistula of the right forearm with cardiac retention was treated by resection of the aneurism between three ligatures. The patient was a man thirty six years old. After the operation the disturbances ceased, but the murmur and cardiac signs still persisted.

In the nineteenth case, that of a man twenty eight years old, anti syphilis treatment brought about the cure of an obliterating phlebitis of the right subclavian vein.

Marcus M Suture of the Inferior Vena Cava and the Trendelenburg Operation on the Same Patient with Remarks on the Origin of Indirect Traumatic Tears of the Vena Cava (Naht der Vena cava inferior und Trendelenburgsche Operation an einem Patienten nebst Bemerkungen ueber die Entstehung indirekter traumatischer Cavans c) *Beitr Klin Chir* 1930, cxlviii, 651

The author operated upon a woman who was admitted to the hospital after an accident in severe collapse with signs of intra abdominal hemorrhage. He found a longitudinal tear in the inferior vena cava. Suture of the tear was followed by uneventful convalescence until the fifteenth day. On the fifteenth day thrombosis of the femoral vein and on the twenty-fifth day pulmonary embolism developed. At operation twelve hours after the development of the pulmonary embolism the author removed a large clot and then because of cessation of the heart beat removed the rubber tube and compressed the pulmonary artery with his fingers. A few moments later he released the compression and removed a second large clot. Healing occurred by primary union but the patient died after a week from bilateral pneumonia. (XELER (Z))

## BLOOD, TRANSFUSION

Brines, O A Fatal Post-Transfusion Reactions  
*J Am M Ass* 1930, xciv, 1114

In 4 000 transfusions there were 2 deaths directly attributable to the transfusion and 3 severe but non fatal reactions.

Post transfusion reactions are classified as those due to (1) incompatibility, (2) chemical reactions, and (3) allergic reaction. The symptoms caused by incompatible blood are described. So far as compatibility is concerned, it is necessary only that the plasma of the recipient does not agglutinate the cells of the donor. The advantages of grouping and matching are discussed and anaphylactic reaction is considered. Nephritis as a complication is dealt with.

The 2 fatal cases in the series reviewed are reported briefly.

The universal use of Group 4 donors is advocated as a means of preventing accidents and reducing the incidence of post transfusion reactions. The author reminds us that the blood group of an individual remains constant throughout life.

CARL R. STEINKE M.D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

Gudin Method of Sterile Operation (Méthode opératoire stérile) *Presse méd*, Par., 1930, xxxviii, 516

Operative infection may have its origin in the site of the operation, the skin, the materials employed or the air. After sterilization, the materials and the skin may become recontaminated from the air. Air should enter the autoclave only through a filter of cotton. The air of the operating room contains pathogenic bacteria such as streptococci, pneumococci, and colon bacilli. Gloves and utensils long exposed to it do not remain sterile. The longer the operation, the greater the danger of their contamination. Mention is made of the danger of allowing the air to enter the thorax in intrapleural surgery. Various bacteriologists are quoted with regard to the bacteria in the air.

The author states that our aseptic methods have allowed infection by the air to occur as frequently as ever. He emphasizes that in surgery it is necessary to do the maximum to be certain of doing the minimum, that it is essential, not only to obtain sterility, but also to maintain it. He reviews physical and chemical measures for sterilizing the air.

FLORENCE A. CARPENTER

## ANTISEPTIC SURGERY, TREATMENT OF WOUNDS AND INFECTIONS

Sauvé Bacteriophage (A propos de bactériophage) *Bull. et mem. Soc. nat. de chir.*, 1930, lvi, 348

In more than 200 cases in which Sauvé employed bacteriophage therapy since his previous communication on the subject he had only 8 failures. He reports the latter in detail.

There are 5 types of conditions in which bacteriophage treatment is definitely indicated in preference to surgery:

1. Acute recent staphylococcus infections which can be reached by the needle of a Pravaz syringe. For these conditions, stock bacteriophage may be used if it is prepared from virulent cultures.

2. Old staphylococcus infections. As these are often resistant because of the presence of antiphages, it may be necessary to remove the antiphages by autohemotherapy before the stock bacteriophage is used.

3. Mixed infections in which the staphylococcus is the predominant micro organism, the infection is acute and recent, and the focus can be reached with the needle.

4. Acute recent colon bacillus infections which have not been treated with antiseptics. In these conditions an autobacteriophage should be used. If

stock bacteriophage is employed, its activity against the colon bacillus harbored by the patient should first be tested out experimentally.

5. Certain generalized staphylococcus and colon bacillus infections which can be treated by the intravenous or subcutaneous route.

At present, all other surgical infections are inconsistent in their reaction to bacteriophage treatment if not resistant to it.

Since their last report, Sauvé and Jacquemaire have had more than 40 cases in which a cure resulted on the day of the injection or the following day. These included such conditions as carbuncle, abscess of the anal margin, and abscess of the breast. In a grave colon bacillus septicemia with a positive blood culture which followed the accidental interruption of pregnancy, the blood culture became negative the day after treatment with autobacteriophage, and seventeen days later sterility was still maintained. In the remaining 160 cases the cure was obtained in from five to ten days. A typical case reported was that of a man about thirty years of age who had a large carbuncle of the upper lip with infiltration into the right cheek extending almost to the eyelid. In the center of the infiltration an indurated cord could be felt. This was thought to be the phlebotic facial vein. Four injections of a very active strain of bacteriophage were made into the carbuncle and into the infiltration of the cheek around the indurated cord. At the time of the injections the temperature was 39 degrees C. That evening it rose to nearly 40 degrees C. The next day, no distinct improvement being noted, the injections were repeated. Sauvé was then obliged to leave the patient in the care of his physician and was uncertain whether or not operation would be necessary the following day. However, on the third day improvement was apparent. The bacteriophage treatment was therefore continued. By evening, the pain and fever had ceased, and three days later, six days from the initial injections, the patient was discharged cured.

Commercial bacteriophages however carefully made, are not equal to bacteriophages prepared freshly each day and employed at the height of their virulence. In stating that stock bacteriophages suffice in staphylococcus infections Sauvé has in mind the polyvalent strains derived from Gratia's famous H strain. According to Sauvé's experience, heating above 56 degrees C attenuates the activity of the bacteriophage. Stock bacteriophages are usually heated to this point to obviate secondary cultures. Sauvé believes that success depends also on the opportunities for examination and surveillance of the patient that are obtainable only in hospitals. His failures all occurred in cases treated outside of hospitals.

FLORENCE A. CARPENTER

**Ricard Douillet and De Mourgues** *The Treatment of Certain Inflammations and Suppurations with Bacteriophage* (Traitement de certaines inflammations et suppurations par le bactériophage) *Lyon chir* 1930, xxvii 249

The authors report two cases in which bacteriophage was used. The first was that of a woman aged forty eight years who, on December 27, sought treatment for an abscess of the lower lip on the left side which was about the size of a cherry and with out clearly defined limitations. The inframaxillary glands were enlarged. The next day three injections of bacteriophage (about 2 c cm in all) were made into the edge of the tumor two on the cutaneous side and one on the mucous side. After the injections the patient felt better. Forty eight hours later the injections were repeated. On December 31 the tumefaction had almost entirely disappeared and palpation revealed only a hard indolent mass no larger than a cherry stone. Ten days after the last injections nothing was visible and only a nodule the size of a pinhead could be palpated.

The second case was that of a man aged fifty two years who entered the hospital on January 12 with a voluminous diffuse tumefaction at the nape of the neck and a temperature of 39 degrees C. Bacteriophage to the amount of 8 c cm was injected deeply into the mass at several points. The next day the patient said that he had felt better immediately after the injection. Four days later a fluctuating point was found and a small incision gave issue to a deep collection of pus. The temperature did not rise again. The pain ceased and the swelling disappeared.

Equally good results were obtained also in a third case.

Bacteriophage may be employed alone or combined with surgical treatment. One of the chief benefits of its use is the immediate relief of pain.

In the discussion of this report, **TAVERNIER** said that bacteriophage may be of great value in the treatment of furuncles and anthrax. Its chief disadvantage is the fact that it must be brought into direct contact with the bacterium; this necessitates its injection into the furuncle itself, which is very painful.

PICOT

**Gratia A.** *The Treatment of Staphylococcus Infections with Bacteriophage and Staphylococcus mycolysates* (Le traitement des infections à staphylocoques par le bactériophage et les mycolysates staphylococciques) *Bull et mém Soc nat de chir*, 1930 lvi 345

Following a review of the history of the discovery of staphylococcus bacteriophage and some of the successful results of its use, especially in grave cases of carbuncle, Gratia states that in his opinion the polyvalent bacteriophage B H is the remedy of choice in acute staphylococcus infections. However, he calls attention to the fact that in case of recurrence subsequent injections are without result and it appears that the body has been sensitized to the

infection by the previous injections. The problem of the prevention of recurrences is therefore of great importance.

Gratia believes that this problem is solved by treatment with staphylococcus mycolysates. He has found that living staphylococci have the power to dissolve dead staphylococci. In experiments carried out to ascertain whether micro-organisms particularly adapted to the destruction of bacteria are present in the surrounding air or in water, he exposed to the air Petri dishes containing water and gelose with thick emulsions of dead and living bacteria. A mold, the streptothrix grew and completely clarified the emulsion although the latter was very opaque from the presence of various bacteria. The same remarkable dissolution took place when spores of streptothrix were sown in emulsions of dead or living bacteria in distilled water. The staphylococcus the cholera vibriion, and the pyocyanus bacillus were easily dissolved in this manner, and more recently the method has been found effective against the streptococcus the bacillus of whooping cough and the gonococcus.

In a study of the optimal conditions for the dissolution it was found that dissolved and filtered emulsions lost all their toxicity while they retained their antigenic properties. Because of this fact it was possible to inject into guinea pigs and rabbits quantities of cholera mycolysate corresponding to many times the lethal dose of non mycolysated vibriion, and fifteen days later the serum of these animals showed intense vibriolytic properties capable of protecting fresh guinea pigs against cholera infection.

Gratia believes that staphylococcus antigen deprived of its toxicity is just what is needed to maintain the cure of staphylococcus infections obtained with bacteriophage. He cites a case in which staphylococcus bacteriophage and mycolysate were employed with complete success in the treatment of a patient who had suffered with furuncle constantly for three years in spite of other therapeutic measures. To date he has used the combined treatment in a large number of cases. It has proved rapidly and constantly effective, harmless, painless, and easy of application.

FLORENCE A. CARPENTIER

## ANÆSTHESIA

**DeCourcy J. L.** *The Use of Controllable Spinal Anesthesia in 500 Major Operations* *Ohio State M J* 1930 LVII 307

Spinoan and the Pitkin technique were used. The method of using spinoan is described in some detail. DeCourcy says that postanesthetic paralysis and intradural hematoma do not occur when a proper technique is employed and that spinal anesthesia is in many respects safer than general anesthesia for routine use for operations below the diaphragm.

In the 500 cases reviewed there were no deaths and in no instance was there any ill effect from the

anæsthesia All types of major operations below the diaphragm were included in the series

CARL R. STEINKE, M.D.

Pitkin, G. P. Spinocain—The Controllable Spinal Anæsthesia *J. Med. Soc. New Jersey*, 1930, LXIII, 418

Pitkin describes the technique and reviews the advantages of the induction of spinal anæsthesia with spinocain. He states that the method is adaptable to all types of cases whether the blood pressure is high or low or the patient is young or old or fat or thin. It may be used even for patients with a cardiac condition, diabetes or alcoholism. Pitkin's youngest patient was two months and his oldest ninety-one years of age. Spinocain spinal anæsthesia is of distinct value for patients with pulmonary, renal, and cardiovascular diseases. In acute abdominal conditions it lessens morbidity, shortens convalescence, and lowers the mortality. The author regards spinocain spinal anæsthesia as the safest form of anæsthesia for operative procedures below the costal margin.

JACOB M. MORA, M.D.

Donald, C. Spinal Analgesia with Spinocain *Proc. Roy. Soc. Med.*, Lond., 1930, XXIII, 915

Spinocain was first introduced by Pitkin, who sought to eliminate the disadvantages of other agents for spinal analgesia by using a combination of novocain, strychnine, alcohol, and a viscous substance and introducing novocain and ephedrine separately into the tract of the spinal needle before making the injection. Novocain is employed because of its low toxicity. Strychnine is used to act on the vasoconstrictors and maintain the blood pressure, alcohol, to make the solution lighter than cerebrospinal fluid and therefore controllable by the position of the patient, and the viscous medium, to delay absorption of the novocain and diminish the diffusibility. The separate novocain and ephedrine anæsthetize the track of the larger spinal needle and assist in maintaining the blood pressure.

Donald reports that his experience with spinocain has not confirmed the claims of controllability and maintenance of blood pressure. In his opinion it has no special advantage over novocain or novocain for spinal analgesia.

SAMUEL KAHN, M.D.

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PACF

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FLORENCE A. CARPENTER

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In the 500 cases reviewed there were no deaths and in no instance was there any ill effect from the

for inflammations in the axillary region. Usually a single irradiation with 1 skin unit dose and filtration with from 2 to 3 mm of aluminum is sufficient. During a period of ten years, 104 cases were treated and 82 of the patients were re-examined. The result was excellent in 60 cases within fourteen days and in 12 cases within four weeks. In 9 cases it was poor, and in 3 cases a recurrence developed.

FREY (Koenigsberg) reported experimental studies on dogs with regard to the functional effect of roentgen rays upon the vascular musculature. The carotid and femoral arteries were irradiated at different sites. The effect differed from that produced by adrenalin, but was not uniform. Moreover, the Arndt-Schultz law did not apply to the dosage of roentgen irradiation.

KAHNT (Berlin) recommended for the treatment of suppuration of the sweat glands, in addition to roentgen irradiation, undermining of the skin of the axillary fossa by 4 incisions a few millimeters long and the insertion of small rubber strips into the openings. He removes the strips after ten days.

STETTINER (Z.)

#### RADIUM

Forsell, G. Radiotherapy of Malignant Tumors in Sweden. *Brit J Radiol*, 1930, 14, 198

Forsell discusses the efficacy of irradiation in the treatment of malignant tumors on the basis of his experience of twenty years at Radiumhemmet. Except in cases of cancer of the skin, irradiation treatment at Radiumhemmet was at first limited to inoperable cases. When, in cases of certain tumor localizations, freedom from symptoms was obtained for any length of time the treatment of borderline cases was begun. When, in borderline cases, an incidence of five year cure equal to that of radical operation was obtained, it was considered justifiable to treat operable cases by irradiation. Practically all of the patients who have been treated have been followed up.

The five-year results after exclusively irradiation treatment are compared with those after surgical treatment in Swedish clinics. Such a comparison is not exact because the surgical statistics include only operable cases whereas the irradiation statistics contain a large percentage of borderline and inoperable cases. However, in cutaneous cancer and in cancer of the lip the ultimate results obtained with irradiation have been quite equal to those of surgery.

In carcinoma of the mouth a five-year cure has been obtained in operable cases more frequently by irradiation than by surgery. In carcinoma of the cervix the end results of irradiation have been so good that the leading gynecologists of Sweden have entirely adopted this method of treatment. In cancer of the corpus the results with irradiation equal those obtained by surgery. Twenty nine per cent of patients treated by irradiation for sarcoma of the tonsil have remained free from symptoms for over five years.

During the past decade more and more use has been made of irradiation in conjunction with surgery. Some of the operations have been typical radical operations, but the majority have been limited to the removal of the local remains of the tumor with electro endothermy. Prior to the surgical interference the tumor is reduced by irradiation as much as possible without damage to the surrounding tissues, and the nearest glandular area is irradiated. During the operation, radium tubes are sometimes inserted temporarily. Afterward the glandular areas are treated with hard filtered roentgen rays or with teluradium. Glandular metastases in the neck, if movable, are operated upon after preliminary irradiation. If there are no palpable nodes no operative removal is done. This combination of irradiation and electro endothermy has yielded a five year cure in 65 per cent of cases of cancer of the mouth without glandular metastases.

In cancer of the breast, pre-operative and post-operative irradiation in conjunction with surgery has resulted in a five year cure in 39 per cent of the cases, whereas surgery alone has given a five year cure in only 23 per cent.

Most malignant tumors referred to the radiologist are so advanced that only palliation may be hoped for. The best objective gauge of palliative effect is the frequency of primary healing or immediate absence of symptoms. At Radiumhemmet palliation was obtained in 38 per cent of all cases examined. It was most frequent in carcinoma of the skin, lip, and uterus. There was no palliation in carcinoma of the digestive tract (excluding the oesophagus and rectum), lung, pleura, or kidney.

Forsell believes that irradiation can be successful only in special clinics equipped with at least 2 gm of radium and staffed by specially qualified men who devote themselves to irradiation therapy.

C. D. HAAGENSEN, M.D.



## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Stapf A Spontaneous Gangrene of the Extremities in Young Persons (Clinical Types Pathogenesis and Etiology (Spontane Extremitätenan- und -absterben im jüngeren Lebensalter. Erscheinungsformen zur Pathogenese und Ätiologie) *Arch f klin Chir* 1930 cxvii 297)

This is a thorough consideration of the clinical and pathological anatomy of gangrene of the extremities in relatively young persons which is now being seen more frequently in Germany and has been erroneously designated thrombo angitis obliterans (Buerger). The author reports eleven cases of this peculiar and severe disease from the two surgical divisions of the Rudolph Virchow Hospital in Berlin. For the complete clinical histories and the pathological findings in the extremities which were amputated the reader is referred to the original article. The clinical picture was an entirely uniform one. In most of the cases the condition had been present over a period of many years and in every instance it terminated in gangrene which involved one or more extremities. Among the eleven patients there was only one woman.

Very early in the condition there are often unbearable pains in the extremities, peculiar sensations, numbness, tingling, increased sensitiveness to cold (subjective and objective), fatigability, and in intermittent claudication. In the initial stage also the migrating phlebitis first reported by Buerger is noted. The most certain sign is disappearance of the typical pulse first in the lower and then in the upper extremities.

Trophic changes occur especially trophic ulcers on the toes particularly the great toes. Nervous vasomotor symptoms are very prominent. These are in part responsible for the intermittent limp. The symptoms which have a nervous basis are variable in their manifestations and often give rise to diagnostic confusion with the clinical pictures of other vasomotor trophic neuroses. They consist chiefly in disturbed vascular reflexes, transient redness, cyanosis, pallor, attacks of anemia particularly of the fingers and local cessation of sweating.

The final stage is the usual sluggishly progressive necrosis which has little tendency to become healed or sharply demarcated. In spite of periods during which there is no progression—periods which last for years—the disease seems ultimately to attack all four extremities. Occasionally also the cerebral and abdominal vessels are involved.

A neuropathic disposition cannot be assumed as the basis of the condition. The author believes there is a special constitutional weakness of the vessels

and the vascular innervation. Specimens removed at operation show thrombotic occlusion of the main vessels and usually of their branches. The development of an appreciable system of collaterals is never observed.

The histological picture is most varied and difficult to analyze. Since the preparations usually represent the end stage, they show only far advanced changes. Nevertheless certain more recent changes responsible for the often suddenly developing necroses must be present. The histological picture seems to indicate that swelling and disintegration of the cells of the intima are followed by splitting of the elastica and the development of foci of necrosis in the muscularis. The changes involve all of the vascular coats and occur in scattered areas. Fatty degeneration and other regressive changes are absent. Regenerative sclerous processes occur early. These consist in connective tissue proliferation of the intima, thickening of the elastica, induration of the media, and vascularization from the adventitia. All reparative processes proceed from the intima. An early result of the disease of the vessel wall is spontaneous thrombosis of the lumen with subsequent organization of the thrombus.

In the beginning the process may be confused with inflammation and perhaps a foreign body inflammatory reaction may be caused by the disintegrating thrombus. The author believes that the essential characteristic is the primary degenerative process in the vessel walls, but in Buerger's opinion the inflammation of all of the coats of the vessel walls is the primary change. Zoega and Manteuffel and the latter's pupil, Weiss, spoke of sclerosing processes in the sense of atherosclerosis. While atherosclerosis in the modern sense does not come into consideration in spontaneous gangrene of the extremities in young persons the author believes that the latter is a special form of sclerosing atherosclerosis occurring in young persons. The atheromatous degenerations, fatty infiltrations etc. are absent, but atherosclerosis is today a subject of more controversy than ever before. If the conception of this condition is not too narrow, spontaneous gangrene of the extremities in young persons with its primary necroses particularly of the media, may be included under the heading atherosclerosis. The name juvenile thrombosing angiosclerosis of the extremities is proposed for the condition as a substitute for thrombo angitis obliterans.

The chief causes are weakness of the vessel walls and the vascular nerves. Injury by cold also plays a part. An influence exerted by the use of tobacco is questionable. Lues is not a cause. An important factor is mechanical overstrain particularly of the lower extremities.

STAPF (2)

## SURGICAL PATHOLOGY AND DIAGNOSIS

Victor, J., Van Buren, J. R., and Smith, H. P.  
 Studies on Vital Staining. IV. India Ink and  
 Brilliant Vital Red. The Importance of Con-  
 sidering Liver Excretion in the Study of "Block-  
 ade of the Reticulo Endothelial System."  
*J. Exper. Med.*, 1930, li, 531.

Davies, F. B., Wadsworth, R. C., and Smith, H. P.  
 Studies on Vital Staining. V. Double Staining  
 with Brilliant Vital Red and Niagara Sky  
 Blue. Correlation of Histological with Physio-  
 logical Data. *J. Exper. Med.*, 1930, li, 549.

When brilliant vital red is injected into the blood stream of dogs much of it is slowly taken up by the reticulo endothelial system of Aschoff. The rate at which the dye leaves the blood stream is dependent upon the action of these phagocytic cells and the excretion of dye in the bile. The injection of a small amount of India ink into the blood stream causes a decrease in the rate at which the dye disappears from the circulation. This is due to the ability of the ink to inhibit the excretion of the dye into the bile, and not to defective activity on the part of the

phagocytes or "blockade of the reticulo endothelial system." It is not known which component of the ink has this effect.

In a study of the vital staining reactions of brilliant vital red and Niagara sky blue in dogs and rabbits it was found that either dye alone is taken up to form red or blue granules within the cytoplasm of macrophages and certain other cell types. When the two dyes are injected simultaneously into the blood stream the cells build up purple granules. When several days elapse between the injections of the two dyes, blue and red granules are found side by side within the cells, but no purple granules are formed. This is thought to indicate that the dye is deposited in small foci which are active in a rather transitory way and that the color of the granule is determined during its formative stage by the type of dye present in the fluids about the cell.

The phagocytic cells enlarge and increase in number as the dose of dye is increased. In this manner the cells keep their phagocytic powers at a normal level and prevent a so called "blockade of the reticulo endothelial system." SAMUEL PERLOW, M.D.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

Stapf A. Spontaneous Gangrene of the Extremities in Young Persons. Clinical Types Pathogenesis and Etiology (Spontane Extremitätengangraen im juengeren Lebensalter. Erscheinungsformen, zur Pathogenese und Aetiologie). *Arch f klin Chir* 1930 *clum* 97

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# INTERNATIONAL ABSTRACT OF SURGERY

DECEMBER, 1930

## ABSTRACTS OF CURRENT LITERATURE SURGERY OF THE HEAD AND NECK

### HEAD

Benedetti-Valentini, F. A New Method of Arthrolysis Applied to Ankylosis of the Jaw (Un nuovo metodo di artroliasi applicato al serramento cronico delle mascelle) *Polidm*, Rome, 1930, xxxvii, sez. prat. 725

The method described is an adaptation of Muzzi's use of fine rubber sponge as an interposing surface in the radical treatment of ankylosed joints. Rubber strands have been employed also in syndesmopecty in dislocation of the clavicle.

The author reports a case of post traumatic ankylosis of the temporomandibular joint of a boy aged nine years. At the age of six, the boy had fallen downstairs, sustaining a laceration under the chin which was followed by intense pain in both temples and a bloody discharge from the right ear. Ankylosis of the temporomandibular joint then developed slowly until the oral aperture was only 1 cm wide. As repeated attempts at forcible movement of the jaws had been unsuccessful and the patient was obliged to limit his diet to semiliquid foods, operation was advised. Examination showed that the right joint was affected more seriously than the left, and that bilateral fracture of the condyloid process had occurred. The mandible was underdeveloped.

In the first stage of the operation the right temporomandibular joint was exposed through an angular incision avoiding the facial nerve. Bony ankylosis was found. The mandible was mobilized by osteotomy, and after the old joint space had been enlarged an oval piece of rubber sponge which had been boiled in a 2 per cent solution of phenol for fifteen minutes was inserted between the bone surfaces. The wound was then closed in layers. Healing occurred by primary intention.

Ten days later the left side was operated upon similarly. Active movement of the jaw was soon possible. Four months later the patient was able to open his mouth 3 cm. and the function of the jaw was good.

The methods used to free the temporomandibular joint are reviewed. KELLOGG SPRUE, M.D.

### EYE

Bourguet. Congenital Ptosis and Its Treatment (Le ptosis congénital et son traitement) *Bull. et mém. Soc. d'chirurgiens de Par.*, 1930, xvii, 313

The palpebral orifice has two functions, to open and to close. The muscles performing these functions in the eyelid are innervated by a branch of the oculomotor nerve. Sometimes paralysis of the levator muscle is associated with paralysis of the right superior muscle that turns up the eyeball. Normally these two muscles act synergistically. In looking up, we combine the action of four muscles for we cannot turn up one eyeball without the other.

The methods for overcoming congenital ptosis are divided by the author into three groups: (1) those having for their purpose the diminution of the upper lid, (2) advancement of the levator palpebral tendon or muscle, and (3) substitution of the right superior muscle for the paralyzed levator muscle. The author prefers the last method. The procedure of Nida is based upon the anatomical studies of Motais. Nida first raises from the entire length of the upper border of the tarsal cartilage a mucocartilaginous strip which he leaves attached on the inside. He then passes this strip under the tendinous insertion of the right superior muscle and sutures it outside at the point where it was detached. This procedure raises the lid to the desired level, with the formation of the superior palpebral fold, and re-establishes the function of elevating the level of vision.

FLORENCE A. CARPENTER

Sellinger, E. Cyclic or Rhythmic Oculomotor Paralysis. *Arch. Ophth.*, 1930, iv, 37

Sellinger reports a case of cyclic or rhythmic oculomotor paralysis which he believes may have been due to congenital syphilis as the patient stated that it began after a course of anti-syphilitic treatment.



juvenilis, the so called degenerative forms of the superficial nerve fibers always appear

4 In pannus of long standing, especially in trachomatous subjects, there are seen very fine, blackish staining, tortuous nerve fibers which always course along the conjunctival capillaries of the pannus. These must be continuations of superficial conjunctival nerve fibers

5 In trachomatous pannus and marginal phlyctenulae there appear in the corneal surface closely adjacent to the affected tissue intensely blue stained, markedly tortuous, and moderately thickened linear formations similar to the degenerative form which seem to be continuations of the conjunctival nerve fibers

6 In epithelial or parenchymatous defects of substance, such as ulcer with atonic keratophlyctenulae, marginal ulcers, and simple erosions of the epithelium, the corneal nerves in the interior as well as at the surface in the vicinity of the affected area stain very well under normal, not degenerated, conditions

7 In epithelial affections, that is, in diffuse or superficial punctate keratitis, the corneal nerves in the deep layers as well as those at the surface stain very distinctly and the so called degenerative forms of the superficial nerve fibers seen in avitaminosis such as are observed in superficial diffuse keratitis in beri beri and during lactation in association with sensory disturbances of the cornea, appear always in the superficial nerve fibers and sometimes in the end fibers with terminal knobs. On the other hand, in simple conditions without sensory disturbances such as acute and chronic conjunctivitis, degeneration of the corneal nerves is lacking in the superficial as well as the deep nerves. The findings in superficial punctate keratitis are very similar to those in the diffuse form, but in the punctate infiltrated area the nerve fibers are especially tumescent and therefore show markedly irregular thickening

8 In herpes of the cornea the changed areas of the nerve fibers, which generally present a moderately intact appearance with irregular thickening during their course, almost always correspond to the area of herpetic disease. In other words, the nerve fibers are almost always especially affected at the site where the cornea is affected by the herpes. In this case the affection of the corneal nerves appears to occur always in the superficial epithelial and superficial parenchymatous nerve fibers

9 In the above described affections the degeneration of the corneal nerve fibers appears always in the superficial, and almost always in the epithelial, nerves. However, in certain diseases such as chronic glaucoma and phthisis bulbi the degenerative process attacks the deeply lying corneal nerve trunks to a marked degree. The deep thick corneal nerves are generally stained irregularly that is, the grossly interrupted, destroyed nerve fibers, which also are indistinctly differentiated from each other, are sometimes stained intensively a blackish blue and sometimes a very weak blue. They are separated into

fibrous bundles and appear, on the whole, as a single nerve trunk in a state of marked deformity. Sometimes there are a few small pieces of medullary nerve fibers consisting of thick intensely stained pieces bound together by very delicate fibrils. The degeneration of the superficial nerve fibers is still more marked than that of the deeply lying fibers. The superficial fibers become almost always rudimentary and show varying degenerative forms

10 The vascular penetrations or vascular branchings into the cornea, such as are seen in parenchymatous keratitis and cicatricial corneal tissue, seem in some cases, even though not in all, to follow the course of the nerves

LOUIS NEUWEIT M.D.

Wright R E. Superficial Punctate Keratitis. *Brit J Ophth*, 1930, *xiv*, 257

Superficial punctate keratitis is an affection of the cornea and conjunctiva characterized by discrete opacities of the superficial layers of the cornea varying in size and number. It is most common in males between twenty and thirty years of age. It has an acute onset and is usually unilateral. Trauma favors an attack. The onset is like that of mild conjunctivitis, but may be associated with a catarrhal condition of the respiratory tract. Hypotonus may develop, but vision is rarely disturbed. There is no iritis, very little if any change in corneal sensibility, and no change in the pupils or reflexes

The cause is unknown. Cultures made on a variety of ordinary media incubated aerobically and anaerobically showed either no growth or a small number of organisms of no specific type. Experiments on animals suggest that the causative agent is a specific filter passing virus. There is no associated skin affection of a herpetic type or fifth nerve neuralgic pain

The opacities persist from a week to over a year, but as a rule disappear in less than two months. Improvement is usually rapid when the eye is kept covered with a pad moistened with boric acid, dionin drops are used twice daily, and atropin is used at night. The prognosis is good. One attack apparently gives immunity for a time. LESLIE L. MCCOY, M.D.

## EAR

Mirvish, L. Otosclerosis As Metabolic Disorder. *J Laryngol & Otol*, 1930, *xiv*, 449

In the attempts made in recent years to treat otosclerosis with endocrine preparations, good results have been obtained in some cases from the use of parathroid tablets. Mirvish reports an intensive study of three cases treated with parathormone injections in which hearing was continuously controlled by quantitative tests. Although the number of cases is very small, the period of observation, which ranged from one to three years, justifies certain conclusions

The parathormone definitely arrested the progress of the deafness, and in two cases produced considerable improvement in hearing. The improvement



was noted within the first two months of the treatment, thereafter no further improvement occurred even though the parathormone dosage was increased. The improvement has been maintained.

It is suggested that otosclerosis is analogous to osteomalacia and rickets, and that the basis of these three conditions is hypoparathyroidism.

JAMES C. BRASWELL, M.D.

## NOSE AND SINUSES

Metz, W. R. Cartilaginous and Osteocartilaginous Rib Grafts in the Correction of Certain Deformities of the Nose. *New Orleans M & S J*, 1930 LVIII, 631.

The author recommends the use of cartilaginous and osteocartilaginous rib grafts for the correction of certain deformities of the nose and reports cases illustrating the technique.

He states that ivory is not a suitable material for grafts as it is difficult to model and frequently is not tolerated by the tissues. In the use of bone grafts successful results depend upon close contact of the grafts with the adjacent nasal or frontal bones. Infection is usually followed by loss of the entire graft. Costal cartilage is an ideal substance for repair of the nasal framework. It is obtained most easily from the seventh, eighth or ninth ribs.

In the correction of nasal deformities the endonasal approach is best. An incision is made at the lower border of the triangular cartilage above the mucocutaneous junction. The mucous membrane and periosteum are elevated so as to produce a tunnel like recess or bed. Rigid asepsis is essential for a successful result. The resection of the costal cartilage and the rhinoplasty are usually done under local anesthesia.

The article includes several photographs showing the author's postoperative results in typical nasal deformities.

W. M. PATON, M.D.

Trotter, H. A. A Conservative Treatment of Chronic Maxillary Sinusitis. *Arch Otolaryngol*, 1930 XI, 18.

The conservative treatment of chronic maxillary sinusitis by means of the antroscope and surgical diathermy is described. The instrument used in diagnosis and treatment is shown in a photograph.

Antroscopy is a valuable method of diagnosing diseases of the antrum. The antroscope may be introduced through a perforation in the naso-antral wall or through the canine fossa, but the latter route is preferable to the former. Roentgenograms are reliable diagnostic aids but transillumination is of little value.

The technique of using the combined antroscope and electrode carrier is described in detail. The advantages of surgical diathermy include sterilization of the wound, hemostasis, comparative freedom from secondary hemorrhage, reduction of postoperative discomfort and shock and rapid convalescence.

The author concludes that roentgenograms and the use of the antroscope are the best methods of diagnosing disease of the maxillary sinus and that electrocoagulation is an efficient and conservative method of treating chronic maxillary sinusitis.

W. M. PATON, M.D.

Wright, C. F. Radical Maxillary Sinus Operation (Caldwell-Luc) Summary of Clinical and Histological Observations on 100 Patients. *Arch Otolaryngol*, 1930, XII, 63.

In 50 per cent of the cases of disease of the maxillary sinus reviewed by the author there was a bilateral nasal discharge. Associated symptoms were frontal headache in 33 per cent, local pain over the antrum in 14 per cent and recurring colds in less than 25 per cent. In 3 cases the disease was secondary to infection of teeth. Over one third of the patients had been treated by lavage. A history of arthritis was given in 5 cases. The incidence of this condition was highest in young adults in whom the edema and fibrosis of the mucous membrane was most extensive.

Attention is called to the fact that marked changes may occur in the mucous membrane without correspondingly marked clinical symptoms. Subepithelial infiltration of plasma cells and small lymphocytes was found in fully two thirds of the cases reviewed. Edema of the mucous membrane and of the tunica propria was another prominent feature. Glandular hyperplasia was not marked.

The author concludes that the mucous membrane can regenerate and that the degree of regeneration depends upon the amount of residual infection.

W. M. PATON, M.D.

## MOUTH

Burdick, C. G. Harelip and Cleft Palate. *Ann Surg*, 1930, XCII, 35.

Of 184 infants with harelip and cleft palate 12 per cent died before any operative procedure was attempted, 10 per cent died as a result of operation and 6 per cent died as a result of malnutrition following operation. In 139 cases operated upon there were 28 deaths.

The lip and alveolus should be repaired as soon after birth as possible and the palate closed at about the age of three years. Earlier closure of the palate does not improve speech. JAMES B. BROWN, M.D.

## PHARYNX

Lahey, F. H. The Surgical Management of Pharyngo-Esophageal Diverticulum, Based upon an Operative Experience with Twenty One Cases. *Surg, Gynec & Obs*, 1930 LI, 227.

Lahey states that the two stage operation for esophageal diverticulum is a safe procedure. Proper dissection of the neck of the sac and high implantation of the sac reduce postoperative difficulties to the minimum.

A plan is presented for the implantation of small diverticula within the wound and for excision of the mucous membrane lining the small implanted sacs without re opening of the space in front of the pre vertebral fascia

JAMES C BRASWELL, M D

## NECK

**Pemberton, J deJ** Recurring Exophthalmic Goiter Its Relation to the Amount of Tissue Preserved in Operation on the Thyroid Gland  
*J Am M Ass*, 1930, xciv, 1483

The belief that recurrence of the hyperthyroidism of exophthalmic goiter is wholly attributable to inadequate resection of the gland and that its prevention can be accomplished by more radical resection, even to the point of producing hypothyroidism, is not supported by the facts. The author cites three cases in which exophthalmic goiter recurred after a subtotal thyroidectomy that was followed by evidences of thyroid insufficiency. In one case there was mild hypothyroidism without symptoms of myxedema, and in two cases there was definite myxedema. In one case a second operation was required. The one reasonable interpretation of the sequence of events in these cases is that as long as there is any viable thyroid tissue, even though it is functionally inadequate to meet the normal demands of the body, it is capable, under the proper stimulus, of regenerating even to the point of causing hyperthyroidism.

In every operation on the thyroid gland there are two requirements of equal importance one, the removal of sufficient thyroid tissue to relieve the hyperthyroidism, and the other, the avoidance of injury to contiguous structures, especially the inferior laryngeal nerves and the parathyroid bodies. Complications can be avoided if two principles of technique are followed preservation of the postero-mesial portion of the lobe, and avoidance of exposure of the lateral wall of the trachea.

Recurrence of exophthalmic goiter after operation may be due to a recurrence of the stimulus that caused the disease originally. Just what this is and where it resides are matters of speculation. Iodine deficiency and a constitutional nervous status may be predisposing factors. Such conditions must be taken into consideration and corrected as far as possible.

**Bromeis, H** Total Necrosis of Half of a Goiter After Ligation of Both Main Arteries (Total nekrose einer Strumahaelfte nach Unterbindung der beiden Hauptarterien). *Chirurg*, 1930, u 171

Bromeis reports two cases of Basedow's disease treated at the Tuebingen Clinic in which preliminary ligation of the vessels led to necrosis of the goiter followed by death.

The first case was that of a woman twenty five years old who was suffering from severe Basedow's disease. After preparation with Lugol's solution, preliminary ligation of both arteries on the right

side was done. Following initial improvement, the patient's condition became worse at the beginning of the second week, and death occurred on the eleventh day. Autopsy showed total necrosis of the right lobe of the thyroid and bronchopneumonia.

The second case was that of a woman forty nine years of age who had definite Basedow's disease but only a slight increase in the pulse rate. Ligation of all four main arteries was followed by death two days later. Autopsy revealed small fresh areas of necrosis throughout the goiter and bilateral pneumonia of the lower lobes.

Apparently in both cases the necrosis was the result of inadequate nutrition due to anatomical anomalies of the vessels. According to Merke, the tissue of the Basedow goiter is more sensitive than that of a colloid goiter. In the first case reported by the author, ligation of the vessels led to anæmic necrosis which is a coagulation necrosis. As the result, the Basedow toxins were coagulated and thereby were at first fixed and rendered innocuous (the period of clinical improvement). However, as soon as granulation tissue grew from the capsule into the necrotic areas (as indicated by the microscopic picture) the toxic substance which in the meanwhile had become liquefied (liquefaction necrosis having succeeded the coagulation necrosis) was absorbed rapidly and in large quantities. The absorption was followed by aggravation of the clinical condition, cardiac weakness, and bronchopneumonia. The unusually active absorption was indicated by a lively endothelial reaction in the liver. Death was caused by the sudden absorption of large quantities of the specific toxin of Basedow's disease.

The practical conclusions to be drawn from such cases is that ligation with resection is less dangerous than ligation without resection. JASTRAM (Z)

**Pemberton J deJ, and Geddie, K. B** Hyperparathyroidism. *Ann Surg*, 1930, xcii, 202

The case reported by Pemberton and Geddie is the seventh proved case of hyperparathyroidism and the sixth in which the condition was due to tumor. These cases presented a remarkably complete and relatively new clinical syndrome. According to the recent findings of numerous observers regarding the physiology of the parathyroid glands, they represent exactly what would be expected if the body were subjected to an excess of parathyroid secretion over a relatively long period. Recently Albright and Ellsworth reported a case in which they made a diagnosis of hypothyroidism on the basis of a low serum calcium, a high serum phosphorus, cataract, normal density of the bones, and aggravation of tetany by exertion. The cases referred to in this article showed exactly converse changes.

The patient whose case is reported by Pemberton and Geddie was a girl fourteen years of age whose chief complaints were vomiting which occurred in attacks lasting several days, pallor, and loss of weight. Up to two months before her admission to

the Clinic she had suffered from constipation for a little over a year. Also for about a year she had had polydipsia and polyuria she drank about 2 qt. of water each night. She appeared pale and emaciated. A complete gastro intestinal examination revealed no organic lesions. The blood count showed a moderate secondary anemia. The urine usually contained a trace of albumin and occasionally a few pus cells. Roentgenograms of the bones demonstrated diffuse decalcification. A tentative diagnosis of parathyroid tumor was made.

Operation revealed lying behind the left lobe of the thyroid gland at the inferior pole and outside of the capsule but attached thereto a tumor which measured in various diameters 1.5 x 2.5 and 1.25 cm.

After the operation the gastro intestinal symptoms cleared up. The return of renal function to normal was less prompt than in some of the other cases. Six days after the operation the excretion of phenolsulphonphthalein was the same as before. The water concentration tests revealed slight improvement in the ability of the kidneys to concentrate fluids. Electrical reaction was not markedly lacking before the operation but was practically normal a few days after the operation. Roentgenograms of bones made four weeks after the operation revealed no increase in density.

Comperc E. L. Bone Changes in Hyperparathyroidism. *Surg Gynec & Obst.* 1930 1:783

Following a historical review of theories regarding the relation of the parathyroids to bone changes, the author reports a case of osteomalacia in which a diagnosis of hyperparathyroidism and tumor of the parathyroid glands was made and confirmed by operation. A study of the metabolic balance was made for six days and the patient kept under close observation for eleven months. The procedure in serving the calcium balance diet and the methods of chemical analysis are described.

The author reviews also eleven cases of bone changes related to the parathyroid glands which have been reported in the literature. All were characterized by pain, bowing of the weight bearing extremities, generalized osteoporosis, progressive weakness and general lassitude. The cases in which blood chemistry studies were made showed an increase in the serum calcium, a decrease in the serum phosphorus and a negative calcium balance. The twelve cases are compared in two tables.

Most cases of hyperparathyroidism show symptomatic improvement under treatment with ultra violet light and a diet rich in Vitamin D. Improvement is noted also when an adenoma of a parathyroid gland is removed or irradiated.

W. O. JONES, M.D.

# SURGERY OF THE NERVOUS SYSTEM

## BRAIN AND ITS COVERINGS, CRANIAL NERVES

Naffziger, H. C., and Glaser, M. A. An Experimental Study of the Effects of Depressed Fractures of the Skull. *Surg., Gynec. & Obst.*, 1930, 11, 17

In the experiments reported in this article which were carried out on rabbits, the authors studied the effects of simple, non-penetrating depressed fractures of the skull produced with and without a blow and of slowly localized compression without fracture produced by the insertion of beads between the dura and skull. The conclusions drawn by them from the necropsy findings are as follows:

1. The changes in the brain are caused by the force producing the injury rather than the depression of the bone.

2. The pathological changes in the brain appear more marked in the early and late stages than in the intermediate stage, and are chiefly subcortical.

3. Depressions of moderate size result in no pathological changes in the underlying meninges and brain.

4. Slow localized depression or compression does not result in pachymeningitis, leptomenigitis, adhesions, softening, or cyst formation.

The experimental results are summarized in five tables, the gross and microscopic findings are shown in illustrations and the article is supplemented by an extensive bibliography.

ALBERT S. CRAWFORD, M.D.

Bostroem, A. Traumatic Injuries of the Brain (Ueber traumatische Hirnschädigungen). *Monatsschr. klin. u. chir.*, 1930, 1, 129

In rare cases a circumscribed accumulation of spinal fluid may produce the characteristic disease picture of traumatic compression of the brain as definitely as the more frequently occurring hemorrhage from the middle meningeal artery. In compression of the left cerebral hemisphere the frequently present sensory aphasic phenomena may lead to correct localization of the lesion. In right-sided lesions, local diagnostic criteria are obtained only when the hemorrhage has advanced so far that the motor area is also affected by the compression. Intracranial hemorrhages at the base of the brain produce symptoms like those of meningitis. The differentiation of the symptoms of intracranial bleeding from those of concussion of the brain is difficult when the loss of consciousness caused by the concussion lasts so long that the patient is prevented from regaining consciousness by the increase in brain pressure. In such cases focal symptoms indicate that compression is present in addition to concussion.

In subdural hemorrhages the symptoms of compression are less characteristic, they develop more slowly and more atypically. The author reports a case in which the symptoms of brain pressure required several weeks for their development. Neurological symptoms were present on both sides because as autopsy showed, there was an organized subdural hematoma on the right side and a considerable symptomatic swelling of the brain on the left side. In preparation for trephination it is advisable to give an intravenous injection of hypertonic glucose solution. Occasionally it is possible temporarily to relieve the frequently dominant symptoms of brain swelling so that the focal symptoms produced by the accumulation of blood become distinct.

Foci of contusion appear most frequently at the top of the convolutions, at the pole and in the basal portions of the frontal lobes, and at the basal and lateral portions of the temporal lobes. Medullary hemorrhages are much less frequent and occur only with vascular injuries. Fractures at the base of the skull often lead to avulsions of the ethmoid plate and injure the olfactory bulb. Hence the test of smell should never be omitted. The late conditions of foci of contusion are manifested pathologically-anatomically as losses of substances in the cortex with cicatricial, pigmented borders. They resemble the yellow plaques of arteriosclerotic origin, but are differentiated from the latter by their special localization.

Concussion of the brain must be sharply differentiated from contusion. Contusions must not be considered concussions because they are associated at first with unconsciousness. The author discusses the various theories of the origin of cerebral concussion. He states that the petechial hemorrhages assumed by Ricker may explain the symptoms which occasionally appear as late results after concussion, but usually there is an immediate loss of consciousness with subsequent improvement, whereas according to Ricker's assumption the extravasation of blood resulting from mechanical irritation of the vascular nerves of the brain does not occur until some time after the injury. The author assumes that these late effects of cerebral concussion which are attributable to petechial hemorrhages appear only in association with a certain predisposing condition such as lability of the vascular nervous system, arteriosclerosis, or chronic intoxication with alcohol, lead, or some other toxin. In such cases the sequelae of the concussion last longer without necessarily producing permanent injuries. In judging the sequelae following an injury of the skull knowledge of the patient's neurological status is necessary. When complaint is made of vertigo, a search should

be made for labyrinthine and cochlear disturbances. Equally important is a test of smell. Post-traumatic loss of the pupil reflexes is observed. On the basis of such a positive finding it is justifiable to assume that organic lesions are present.

The author advises against the use of complicated methods of examination such as tests of the passage and resorption of the spinal fluid and the encephalographic methods proposed by Schwab and Belschowsky. These procedures produce a new psychic trauma. Even in the absence of neurological symptoms of an attack, the psychiatically trained physician will be able to differentiate organic late results from hysterical symptoms on the basis of the nature of existing psychic changes such as a lack of ambition and emotional instability. Valuable cues are offered also by the patient's history. Unconsciousness of long duration, delirium and retrograde amnesia suggest that foci of concussion are present in addition to concussion. In general it should be borne in mind that sequelae are rare after brain injuries. The yellow plaques are often found only incidentally at autopsy having produced no symptoms during life.

Fright and shock lead to organic changes only when there is injury of the blood vessels. The brain injuries following birth trauma are of special importance. In children with such injuries not only the intelligence but also the motor functions remain at approximately the infantile level.

CORRALES (Z)

Felsen J. Laboratory Studies in Epilepsy. *Arch Int Med* 1930 41:1 183

The author studied seventy three epileptic patients from a laboratory standpoint. The formed elements and chemicals of the blood, renal function, sugar tolerance, spinal fluid, protein sensitization, sputum, face, cardiac function, blood pressure, basal metabolic rate, sympathetic system and X-ray findings in various organs were investigated. Many of the tests were repeated during interparoxysmal and paroxysmal periods.

Although the author concludes that the data reveal significant variations, there is a lack of constancy in the abnormal deviations which raises skepticism with regard to the information to be derived from them concerning the pathogenesis of epilepsy.

LEO M. DAVIDOFF M.D.

Cushing H. The Chiasmal Syndrome of Primary Optic Atrophy and Bitemporal Field Defects in Adults with a Normal Sella Turcica. *Arch Ophth* 1930 31: 505 704

The author discusses a variety of conditions producing primary optic atrophy with bitemporal field defects in adults with an essentially normal sella.

In its purest form the syndrome is associated with suprasellar meningioma. These tumors have their point of dural attachment over the chiasmatic sulcus and tuberculum sellae, so that when freed at this growing point the major unattached portion of

the growth which underlies and elevates the chiasm can usually be tilted out in an intact piece.

Essentially the same group of symptoms may be produced by a pituitary adenoma which has failed to enlarge the sella but in cases of pituitary adenoma the symptoms tend to have a more rapid onset and there is atrophy of the sella which is absent in cases of meningioma. The adenoma may conceivably arise from an anlage in the hypophyseal stock above the diaphragma sellae or if superficially placed may escape through the diaphragma without expanding the sella.

The syndrome may be produced also by craniopharyngioma. As these tumors are congenital they usually give evidence of their presence in childhood. Their presence is strongly suggested by suprasellar calcification. The amount of calcification varies from a few flecks to an enormous mass. When symptoms of the lesion appear before adolescence and when as commonly occurs the anterior lobe of the pituitary gland fails to develop properly, sexual and skeletal infantilism of varying degree result. If the symptoms are delayed until adult life constitutional evidences of secondary hypopituitarism may appear with sexual dystrophy and other signs.

Gliomata of the chiasm rarely occur in adults and usually are not associated with such definite hemianopsia. They are apt to be accompanied by distention of the optic foramina which usually can be detected by X-ray examination, and are often associated with evidence of von Recklinghausen's disease.

Occasionally, a suprasellar aneurism produces a chiasmal syndrome suggesting a suprasellar tumor. Concomitant vascular hypertension should suggest the presence of a suprasellar aneurism.

Chronic arachnoiditis may produce a suprasellar syndrome with a normal sella. At operation the findings are negative except for an excess of fluid and apparent thickening of the walls of the cisterna chiasmatis.

Large central scotomata indicating more precocious involvement of the central (macular) bundles than of the crossed peripheral bundles are more suggestive of retrobulbar neuritis or some other non-tumorous condition.

ROBERT ZOLLINGER M.D.

Aboulker H. and Badieroux A. Trephination of the Skull at a Distance. General Method of Diagnosis and Treatment of All Intradural Complications of Otic Origin. (Trépanation crânienne à distance. Méthode générale de diagnostic et de traitement de toutes les complications intradurales d'origine otique). *Arch internat de laryngol* 1930 xxxvi 385

The authors state that the best method of diagnosing and treating intradural complications of otic origin is trephination of the skull at a distance from the focus in the mastoid. As this procedure affords the opportunity for both exploration and treatment it is comparable to exploratory laparotomy. However, in all cases it must be preceded by operation

on the mastoid. Being aseptic and almost absolutely harmless it gives the otologist the confidence necessary to insist on early exploratory operation. It is an old method, belonging, indeed, to the pre-otological era, but today it has fallen almost wholly into disuse. Performed without the preliminary extensive cleaning out of the mastoid focus, it is inadmissible, but with the preliminary operation, the objections that have been urged against it lose their force. Sufficient resection of the temporal or occipital skull allows complete examination of the cerebral or cerebellar cortex and easy and convenient puncture in whatever direction may be indicated by signs of localization or, when these are absent by a knowledge of the most usual site of petrous suppurations. Moreover, it assures the most perfect drainage.

The advantages and disadvantages of trephination at various sites are discussed, and the proper procedures for different syndromes are considered.

FLORENCE A. CARPENTER

**De Martel, T. Suprasellar Tumors. Diagnosis and Treatment.** (Les tumeurs supra-sellaires. Diagnostic et traitement.) *Presse méd.*, Par., 1930, *xxviii*, 465.

Suprasellar tumors originate at the level of the sella turcica, develop toward the cranial cavity, compress the optic chiasm and provoke bitemporal hemianopsia and primary optic atrophy without causing deformity of the sella turcica. The suprasellar meningioma is a good example. This tumor has its origin and its point of attachment on the tubercle of the sella immediately anterior to the optic groove, and when surgically detached at this point may be completely removed with ease. The history is much the same in all cases. A subject of middle age notes a decrease of vision, especially in one eye. If perimetry is not done the lesion may be overlooked. There is no sign of hypophyseal insufficiency. As a rule the nature of the condition is not discovered and the patient loses his sight and perhaps his life. If a careful examination is made by the ophthalmologist, bitemporal narrowing of the visual field is found and often a definite bitemporal hemianopsia. The eye grounds may show only a slight pallor of one of the optic disks. Sometimes, however, the optic disks have a manifest atrophic pallor. A lateral roentgenogram discloses a normal sella turcica, but a stereoscopic roentgenogram shows a tubercle of the sella larger and denser than normal.

There are suprasellar adenomata which develop above the diaphragm of the sella turcica and cause no deformity of the latter, but changes of the sella turcica are more frequent in cases of adenoma than in those of meningioma. Verification of the differential diagnosis between meningioma and suprasellar adenoma is usually made at operation.

Congenital cysts developing from rests of the craniopharyngeal canal are known also as "Rathke pouches." They frequently become manifest in childhood or young adult life. Their walls are nearly

always the site of calcium deposits. The calcium deposits facilitate the diagnosis although in rare instances they occur also in meningiomata and adenomata. Congenital cysts are more common than is generally supposed. They vary greatly in size. When a congenital cyst is situated above the sella turcica the latter retains its normal shape and dimensions and the chiasmal syndrome is dominant.

When the presence of a suprasellar tumor is suspected a careful examination should be made for primary optic atrophy as this condition may be very slight even in patients affected with hemianopsia with reduction of visual acuity to 1/10. When the intracranial syndrome of hypertension appears, primary optic atrophy may be accompanied by stasis. Bitemporal narrowing of the field of vision is of great importance in the diagnosis of suprasellar tumors. The small signs of wearing away of the sella should be sought—thinned and pointed anterior clinoid apophyses, backward displacement and thinning of the sella, thickening or attenuation of the optic groove, and enlargement of the optic foramen.

Cushing's technique for reaching and removing the tumor is described. The drawings show a suprasellar meningioma being removed in a single piece. The tumor generally does not recur. Adenoma of the hypophysis is treated in the same way. It recurs frequently, but is easily reoperated upon. The congenital cyst has a much less favorable prognosis. Cushing punctures it and removes as much of it as he can. When hemianopsia is complete, he cuts the chiasm, which does not increase the visual disturbance and, by detaching the optic nerve and the fascia, gives better exposure of the pocket for treatment of its wall and cavity. The latter are touched with Zenker's solution.

The results obtained in cases of suprasellar meningioma and adenoma are often remarkable. Vision is occasionally much improved by the next day. Treatment of Rathke pouches, although sometimes giving excellent results, is usually disappointing, like that of most congenital cysts.

The operative mortality in cases of suprasellar tumors is low. PAGE

**Jelsma, F. Chronic Subdural Hematoma. Summary and Analysis of Forty-Two Cases Collected from the Literature, with the Report of Two Additional Cases.** *Arch. Surg.*, 1930, *xxi*, 128.

The cause of the formation of chronic subdural hematomata is believed to be trauma. In the cases reported by the author the most important and constant clinical phenomena were a latent period, a lucid interval, headaches, disturbances of the cranial nerves, remission of symptoms, and coma. The minor symptoms were vomiting, nystagmus, sensory disturbances, variations in the temperature, pulse rate, and respiration, abnormal fundi, xanthochromic spinal fluid, and leucocytosis. Over 80 per cent of the patients operated upon recovered. The operation of choice is complete removal of the clot through the

opening obtained by the formation of an osteoplastic flap. If the patient's condition permits, an associated decompression is beneficial.

ROBERT ZOLLINGER M D

**Puiggari M I. and Balado M. The Importance of Ophthalmology in Surgery of the Nervous System (Importancia de la oftalmología en la cirugía del sistema nervioso). *Semana méd.*, 1939, xxxvii 897**

During 1929 the authors saw seventeen cases of nervous diseases which were treated surgically. In every instance the patient came to the hospital on account of a visual defect and the indication for operation was discovered in the course of a supplementary neurological examination. The chief sign was decreased vision with transitory amblyopia. Six of the patients were completely blind and four had a considerable decrease of vision. In the rest, vision was two thirds normal. Only one of the patients had a homonymous hemianopsia. The usual change in the visual field was a concentric restriction. Eight of the patients showed typical bilateral edema of the disk, five, the characteristic picture of post edema or post neuritic atrophy, and four simple atrophy of the disk. The condition for which operation was performed was a frontal tumor in three cases, a tumor of the right temporal lobe in two cases, a tumor of the third ventricle, an abscess of the left occipital lobe, a hematoma of the right temporoparietal region, and a myeloma in one case, each internal hydrocephalus in two cases, and external hydrocephalus in two cases. The histories of the cases are given.

The authors state that one of the most frequent mistakes in ophthalmological examination is the diagnosing of simple edema as optic neuritis. In all of the cases reviewed in which edema of the disk was found there was increased intracranial pressure.

AUDREY G. MORGAN M D

**Aboulker H. and Badaroux A. Meningeal Abscesses of Otic Origin (Les abcès méningés d'origine otitique). *Arch. internat. de laryngol.*, 1939, xxxvii 413**

The authors believe that meningeal abscesses are much more frequent than is commonly believed, that many cases diagnosed as meningeal infection or brain abscess with fistula into the mastoid cells are in reality cases of abscesses of the meninges.

The differential diagnosis of meningeal abscess from other complications of otitic origin is generally thought to be impossible, but nevertheless should be attempted. The abscess developing between the pia and arachnoid has a favorable prognosis when it is correctly treated. It is a matter of importance not to confuse a meningeal abscess with meningitis as the treatment for the two conditions differs. It should be borne in mind also that while a subdural abscess should be widely exposed and drained, the exploration of an acute meningo-encephalic suppuration should be kept within narrower limits.

In the authors' opinion the fact that the diagnosis has never yet been made before operation depends less on its difficulty than on general ignorance concerning the abscess. Abscess between the pia and arachnoid in reality a localized meningitis, is manifested frequently by a more or less pronounced meningeal syndrome. The authors cite and discuss a case reported by Heine in 1913 and point out that the lack of harmony shown in this case between the clinical symptoms—high fever, rapid pulse, intense stiffness of the neck, and Kernig's sign—and the results of examination of the spinal fluid which was clear and sterile and contained no abnormal cells would have justified surgical exploration for abscess between the pia and arachnoid.

Meningeal abscess frequently gives rise to motor disturbances such as monoplegia and contralateral hemiplegia, to disturbances of sensation especially hyperesthesia, and to sensorial disturbances such as Wernicke's aphasia. Aviner's statement that in a syndrome of intracranial suppuration hemianopsia eliminates subdural abscess is too absolute, as was shown by a case reported by Eagleton. The encephalic form of meningeal abscess is extremely difficult if not impossible to differentiate from brain abscess but in both conditions the earliest possible intervention is indicated. In meningeal abscess there is a high temperature with tachycardia whereas in brain abscess there is a high temperature with bradycardia. Moreover, there are neurological signs distinguishing cortical from capsular changes and an examination by a neurologist may yield information of diagnostic aid.

FLORENCE A. CARPENTER

## SPINAL CORD AND ITS COVERINGS

**Leveuf J. and Foulon P. 'Cystic' Spina Bifida—Forms in Which the Medullary Area Is Bare—The Myelomeningocele of Recklinghausen (Le spina bifida kystique formes dont l'aire médullaire est à nu—myéloméningocèle de Recklinghausen). *Ann. d'anat. path.*, 1930, vii 579**

The authors have seen eleven cases of cystic spina bifida. In all, the condition occurred in the sacral region. This type is characterized by a red and weeping area exposed at the surface of the tumor.

In the myelomeningocele the wall of the sac is constituted on the surface by the neuroglial tissue of the area, the epithelium of the epitheliomeningeal zone, and the more or less badly formed skin of the dermal zone. In the deeper region the internal wall of the sac is covered by connective tissue. At the area itself the connective tissue forms a very much thickened pia mater, and at the level of the dermal zone and the pedicle of the sac it represents the dura mater. In the epitheliomeningeal zone, however, it is very peculiar. Internally it is continuous with the pia mater, but externally it is lost in the zone where the dura mater meets the dermis. It cannot be said that the connective tissue of the epitheliomeningeal zone is part of the pia mater as it does not correspond to nervous tissue. Nor is it dura mater, as it has neither the thickness nor the exact structure

of the latter. The studies herewith reported revealed nothing definite in this regard. The authors therefore believe that the deep layer of the epithelomeningeal zone is composed of poorly formed meninges. On the other hand, it is certain that the cavity of the spina bifida is continuous with the infra arachnoid spaces of the cord and that the liquid there contained is cerebrospinal fluid.

From their anatomopathological study the authors draw the following conclusions:

1 In true myelomeningocele the medullary area is bare. It becomes infected soon after birth. Recklinghausen's descriptions apply to specimens a long time infected or altered by putrefaction.

2 In the polar fossa above this area the canal of the ependyma opens directly. Therefore the infection invades this canal after a short time.

3 The epithelomeningeal zone, extremely thin, is threatened by early rupture. The opening of the sac inevitably results in fatal meningitis. If operation is to be performed on a newborn infant with a myelomeningocele, it must be done in the first few hours after birth. Late operation is useless.

Eleven cases are reported.

PACI

### SYMPATHETIC NERVES

Cannon, W. B. The Autonomic Nervous System.  
*Lancet*, 1930, ccviii, 1109.

The author discusses the autonomic nervous system from several aspects, citing the literature and reporting the conclusions he has drawn from findings in sympathectomized animals.

One of the functions of the outlying neurone is obviously to multiply the channels of distribution. Another may be to act as a transformer modifying the impulses from the central source and adapting them to the tissues which they innervate.

Contemplation of the double nerve supply of the viscera in which the action of the craniosacral nervous system usually opposes that of the sympathetic, suggests that the sympathetic division has a diffuse action affecting all of the viscera simultaneously, whereas the craniosacral system may act upon a special viscus separately.

Adrenalin prolongs the effects of sympathetic activity, and in some respects, as in the production

of the hyperglycemia associated with asphyxia and excitement, it has an efficiency far beyond that of the sympathetic impulses.

A survey of the general services of the three divisions of the autonomic system indicates that the functions of the sacral division can be summed up as a group of reflexes for emptying hollow organs which are periodically filled up, the functions of the cranial division, as a group of reflexes which are protective, conservative and up building, and the function of the sympathetic as a prompt and direct action to prevent serious changes of the internal environment. "By mobilizing the bodily reserves and by altering the rate of continuous processes, this division (sympathetic) operates to keep uniform the fluid matrix of the organism and therefore may properly be regarded as the special and immediate agency of homeostasis." The craniosacral division likewise aids in maintaining homeostasis, but more indirectly and remotely, and is subject to interference by striated muscle. The author proposes to call the voluntary nervous system the 'exteroceptive' system and the autonomic or vegetative system the 'interoceptive' system.

In experiments in which sympathectomy was done on animals the animals continued to live without apparent difficulty in the laboratory. The findings showed that the sympathetic system is not concerned with the growth of the skeleton or internal organs and that the operation does not reduce the metabolic rate more than 10 per cent, does not noticeably affect the tone or action of the skeletal muscles, and does not prevent the female from performing the functions of reproduction or lactation (except as a delayed effect). However, after the sympathectomy the animals were able to do only about 35 per cent of the work they were capable of performing before the operation. Concomitants of muscular effort, such as the rise in the blood pressure, the redistribution of blood in the body, the dilatation of the bronchioles and the liberation of adrenalin, were rendered impossible, there was total paralysis of the mechanism for liberating sugar from the liver, polycythemia did not occur with excitement, and the entire temperature regulating mechanism failed to function.

HAUT H. HOLCK, M.D.



# SURGERY OF THE CHEST

## CHEST WALL AND BREAST

Carnett J B and Howell J C Bone Metastases in Cancer of the Breast *Ann Surg* 1930, xci, 811

The total number of cases of breast cancer registered in the Radiological Department of the Philadelphia General Hospital in the period from 1924 to 1929 was 267. The great majority represented the late stages of the disease. In the 101 cases with bone metastases, lesions were found in the skull, vertebrae, pelvis, femora, leg bones, foot bones, shoulder girdle, humeri, forearm bones, bones of the hand, and ribs. The bone lesions are destructive. At first there is an osteoporosis and then a sclerosis. In bone metastases in the upper extremity the most advanced destruction is usually in the upper part of the humerus. Invasion of the femur usually begins in the head and acetabulum. The authors believe that bone metastases are due not to vascular emboli, but to lymphatic permeation. In support of this opinion they cite autopsies showing cancer infiltration along the lymphatics, including the glands along the aorta and iliac arteries.

In the discussion LEE said that while he believes that lymphatic extension to bone may occur in some instances, he does not believe that it is as frequent as is suggested by the report of Carnett and Howell.

FRANK D BERRY M D

## TRACHEA, LUNGS, AND PLEURA

Coryllos P N Postoperative Pulmonary Complications and Bronchial Obstruction, Postoperative Bronchitis, Atelectasis (Atelectasis) and Pneumonitis Considered as Phases of the Same Syndrome *Surg Gynec & Obst* 1930 1, 795

Following a review of the various theories as to the cause of postoperative massive atelectasis, Coryllos discusses the theory of bronchial obstruction, the embolic theory, and the etiology of postoperative pneumonitis and pulmonary hypostasis. He then calls attention to the similarities between postoperative bronchitis, atelectasis, and pneumonitis from the point of view of etiology, pathology, onset, evolution, and physical sign.

From experimental and clinical investigations the conclusion is drawn that there are no differences between postoperative pneumonia and postoperative atelectasis other than those due to the type and virulence of the microorganisms infecting the occluding bronchial mucus. Coryllos is convinced that the determining factor is a more or less temporary plugging of a bronchus by mucus followed by absorption of the alveolar air and atelectasis of

the corresponding lung tissue. Obstruction of the lung depends not only on the consistency and viscosity of the bronchial exudate, but also on the expelling force of the lung. Very viscid and tenacious mucus may not be able to obstruct a lung when coughing, respiratory movements and activity of the ciliated epithelium remain unimpaired.

After the development of atelectasis, disruption or expulsion of the main column of mucus with rapid aeration of the affected lung or partial expulsion of the mucus with only partial aeration of the parenchyma may occur during a coughing spell. If the obstruction is prolonged and the virulence of the pneumococci is sufficient, a pneumococcal cellulitis will follow. If the obstructing mucus is infected with pyogenic organisms, suppuration may result if the obstruction is prolonged. If anaerobes are present, gangrene may ensue.

In conclusion, Coryllos says that if the theory that postoperative bronchitis, atelectasis, bronchopneumonia, and pneumonia are simply different stages or manifestations of the same morbid condition is correct, the treatment proposed to overcome bronchial occlusion and insure free drainage of the bronchial tree for forty-eight hours after operation (when the means of defense of the lung are impaired) will make it possible to prevent postoperative pulmonary complications or at least prevent their extension and hasten recovery.

CARL R STEINKE M D

Boyd W Notes on the Pathology of Primary Carcinoma of the Lung *Canadian M Ass J* 1930 xiii 210

The author's material consisted of twenty-three cases of primary carcinoma of the lung, fourteen of which were found in 900 autopsies. All of the subjects were males. Tuberculosis and influenza played no part in the causation of the condition. Boyd says that there is little to support the theory that the inhalation of irritating substances such as exhaust gases from automobiles and tar from roads is a causative factor, and that the apparent increase in the condition can be attributed to the fact that many cases formerly diagnosed as sarcoma or lymphosarcoma are now known to be carcinoma.

Carcinoma of the lung has great invasive power. It usually spreads by the blood stream, frequently causing distant metastases. Of the cases reviewed, secondary growths were found in the liver in 8, the adrenal glands in 6, the kidneys in 5, the brain in 4, the bones in 2, the opposite lung in 2, and the spleen in 1.

According to the gross appearance, 4 types of carcinoma of the lung are distinguished: (1) a tumor arising from the main bronchus and forming a mass

at the hilum, (2) a nodule in the lung substance arising from a smaller bronchus, (3) milium nodules scattered throughout the lung which are due to lymphatic dissemination, and (4) diffuse infiltration resembling pneumonia. A more satisfactory classification is based on the microscopic appearance. This also shows 4 types: (1) the anaplastic or undifferentiated, (2) the medullary, (3) the adenocarcinoma, and (4) the squamous.

Boyd points out that silver stains are of value in demonstrating the essentially carcinomatous character of the tumor because epithelial cells are silver positive whereas connective tissue cells are silver negative. J. DANIEL WILLEMS, M.D.

**Puglisi A.** Corticopleural Affections Occurring Exclusively in the Infant (*Afecciones corticopleurales en el lactante exclusivamente*) *Semana Méd.*, 1930, xxvii, 1023.

The author defines corticopleurisy as an inflammatory condition involving the pulmonary cortex and the pleura. It has varied pulmonary and pleural symptoms and is of infectious origin. It occurs rather frequently in infants, but is less common in infancy than at other ages. In the cases of children under two years of age which were studied by the author, the condition was due to the pneumococcus and influenza bacillus. Puglisi comments on the fact that in no instance was it due to tuberculosis or rheumatism. In the children of tuberculous mothers he observed corticopleurisy in which no bacilli were demonstrable and a complete cure resulted. The pulmonary area most commonly involved is the base of the lung.

The differential diagnosis between corticopleurisy and pleurisy is sometimes very difficult as both conditions are associated with the same decrease in the amount of air entering the base of the lung and the same dullness. In the left side variations in the findings in Traube's space suggest corticopleurisy. In the right side, pleural puncture is necessary for the diagnosis. Roentgenography is of great aid. In pleurisy, the shadow is compact, fills the costo-diaphragmatic space, and has a well defined upper border. In corticopleurisy it is more diffuse and less uniform and has undefined borders. At times the roentgenogram shows a more or less diffuse shadow several weeks after cessation of the symptoms. The prognosis is favorable for complete cure. The treatment is purely hygienic and symptomatic.

RAOUL DE LA GARZA, M.D.

**Locke, E. A.** Acute Empyema. *New England J. Med.*, 1930, cccii, 391.

The author reports a study of 478 cases of acute empyema, in the great majority of which the condition was secondary to pneumonia. The organisms responsible were the pneumococcus in 58 per cent, the hemolytic streptococcus in 28.4 per cent, a non-hemolytic streptococcus in 3.9 per cent, the staphylococcus aureus in 5.2 per cent, and mixed bacteria in 6.6 per cent. In 7.9 per cent the pus was sterile.

In 73 per cent of the cases of pneumococcus infection the pneumococcus was of Type 1.

Empyema due to the pneumococcus appeared as a sequela to pneumonia. As compared with the other types its course was less severe, its prognosis more favorable and its effusion more encapsulated and of more gradual formation. Empyema due to the hemolytic streptococcus developed coincidentally with the pulmonary inflammation and ran a less favorable course. In this condition the purulent exudate may form very rapidly and in large quantities.

The relations between the bacteriological findings in the sputum and pleural fluid were variable except in the cases of empyema due to the pneumococcus of Type 1, in which there was an almost absolute correspondence.

One third of the patients were under ten years of age and 76 per cent were under forty years of age. The empyema was most frequent in the first four months of the year.

A positive blood culture was obtained in 31.3 per cent of the cases. Of these 32.7 per cent terminated fatally. In the cases in which the blood cultures were negative the mortality was 17.3 per cent.

Complications are exceedingly common in empyema. They consist chiefly of focal infections in various parts of the body.

The general mortality in all of the cases of empyema reviewed was 23 per cent. It depended chiefly on the age of the patient and the type of the infecting microorganism. The mortality was highest before the tenth year of age. After the age of ten years it fell abruptly and then steadily rose. Of all deaths, 17.5 per cent were due to infection by the pneumococcus, 34 per cent to the hemolytic streptococcus, 5.2 per cent to the non-hemolytic streptococcus and 20.7 per cent to the staphylococcus.

J. DANIEL WILLEMS, M.D.

**Hudson, H. W., Jr.** The Treatment of Acute Empyema Thoracis in Children. *New England J. Med.*, 1930, cccii, 853.

Hudson calls attention to the fact that since operation has ceased to be performed as an emergency procedure in empyema, the mortality has dropped from 10 to 4 per cent. He takes issue with those who conclude that the report of the Empyema Commission conclusively demonstrates the necessity for closed methods of drainage alone, since no such conclusion was reached. It was the change in the time of operation rather than the technical method which brought about the decrease in the mortality.

Following a review of the literature on simple aspiration, the intrapleural injection of ethyl hydrocupreine hydrochloride, closed drainage, open drainage preceded by repeated aspiration or intercostal closed drainage, anesthesia, operative technique, and results, Hudson tabulates a collection of cases with regard to the method of drainage employed and the mortality.

He then discusses eighty six cases of acute empyema treated at the Boston Children's and Infants Hospital during the years 1927 and 1928. Twenty one of the children were under two years of age and sixty five were between two and twelve years old. Thirty two were treated by intercostal drainage either alone or with subsequent rib resection and fifty four by rib resection alone. In the first group the mortality was 18.7 per cent and the average period of hospitalization thirty two and a half days. In the second group the mortality was 9.2 per cent and the period of hospitalization averaged thirty and a half days. The mortality of the children under two years of age was 33.3 per cent and that of the older children 6.15 per cent. The total mortality was 12.7 per cent. According to the type of micro organism responsible for the infection the mortality was as follows:

Causative micro organism	Cases		Mortality %
	No	No	
Pneumococcus	52	6	11.5
Streptococcus	16	3	18.7
Staphylococcus	6	1	16.6
Mixed bacteria	5	1	20.0
Bacillus influenzae	1	0	0
Not stated	6	0	0

Of the seventy five children who survived, sixty two could be traced. Sixty one of the latter were cured. In the one exception the condition is chronic.

The results show that the age of the patient and the type of infecting micro organism are factors of major importance in the mortality and that it is advisable to delay operation until the metapneumonic period.

The author concludes that rib resection performed as a primary operation in selected cases or preceded by repeated aspiration or intercostal closed drainage during the synpneumonic stage is a valuable therapeutic procedure for empyema in children.

CARL R. STEINKAMP, M.D.

#### Archibald E. The Surgical Treatment of Tuberculous Empyema. *Canadian M. Ass. J.* 1930, xxi, 160.

The author classifies cases of tuberculous empyema into three classes. In cases of Class 1 there is a seropurulent straw colored turbid effusion containing tubercle bacilli which are detectable only by guinea pig inoculation. If the patient's condition is favorable the effusion may disappear permanently after aspiration and retiling with air. If the effusion resists six aspirations thoracoplasty is indicated.

In cases of Class 2 there is a frankly purulent effusion in which the tubercle bacillus may be found in direct smears. The patient is often afebrile until large amounts of pus collect. Aspiration and irrigation may abolish the fever until more pus collects. The pus is thick and greenish or yellowish. Obliteration of the pleural cavity by total thoracoplasty is urgent.

In cases of Class 3 the effusion contains many tubercle bacilli streptococci and staphylococci, and possibly also anaerobes. The patients are in poor condition but some of them can overcome the infection it given help by thoracoplasty performed in several stages to establish external drainage.

The author reports on thirty four cases in which thoracoplasty was done. In one case death resulted from the operation, in five cases a cure was obtained in four cases the condition was arrested and in the others the condition was improved.

J. DANIEL WILLIAMS, M.D.

#### ESOPHAGUS AND MEDIASTINUM

Phelps, K. A. Congenital Anomalies of the Esophagus with a Report of Nine Cases. *Ann. Glot., Rhinol. & Laryngol.* 1930, xxxix, 364.

Congenital anomalies of the esophagus are not extremely common. Phelps classifies them as follows:

1. Absence of the entire esophagus. This occurs only in monsters and is therefore not of clinical importance.

2. Esophagus represented by a solid cord. This is too rare to be important.

3. Double esophagus. This is a rare and unexplained anomaly.

4. Congenital spasm of the esophagus. This is fairly frequent. It is undoubtedly a true neuropathic manifestation.

5. Diverticula of the traction and pulsion types. Diverticula of the traction type can rarely be considered congenital but those of the pulsion type are not infrequent congenital anomalies.

6. Esophagotracheal fistula. This is one of the most frequent congenital anomalies. It is due to an anomaly of the esophagotracheal septum. The clinical picture is typical. The child has no trouble until he is fed. When fed, he takes two or three swallows and then being unable to breathe becomes cyanotic and coughs violently. After expulsion of the fluid he again breathes freely. Gastrostomy or jejunostomy has been done in many cases of this type, but no cure has been reported.

7. Cysts of the esophagus. These are very rare.

8. Atresia of the esophagus. This may occur at the cardiac end of the esophagus or in the middle portion. The tube may be replaced by a solid cord.

9. Stenosis. This is much more common than atresia.

Phelps reports three cases of congenital spasm of the esophagus which were relieved by dilatation, one case of esophagoeal diverticulum, four cases of esophagotracheal fistula, and one case of partial occlusion of the cardiac end of the esophagus.

ALTON OCHSNER, M.D.

Dengel, L. Plastic Restoration of the Esophagus. *Ann. Surg.* 1930, xlii, 51.

A successful plastic restoration of the esophagus is described. The patient was a girl of eighteen years.

who developed a complete stricture of the œsophagus after drinking hydrochloric acid. The stricture was 18 cm. below the teeth. After liberation of the stomach from the gastrophrenic and gastrocolic ligaments a tube was made from the greater curvature. Both the anterior and the posterior wall of the greater curvature were used. The tube was cut well down toward the pylorus and was supplied by the right gastro-epiploic artery. After its upper end had been tightly sutured it was brought out through the upper end of the abdominal incision. The skin over the sternum was then tunneled and the tube brought out at the left third cartilage. Twenty-four hours later the tube was opened and the patient began to feed herself by it.

Six months later the œsophagus was delivered in the neck anterior to the left sternomastoid muscle and left unopened for two weeks. At the end of that

time it was opened and connected by a rubber tube with the tube of the stomach which was 14 cm. distant. The patient was then able to eat and drink normally.

Eight months later a skin tube between and slightly overlapping the two openings was made by folding over a flap of skin. The patient was fed then entirely by nasal catheter. The skin tube broke down because it was subjected to too much tension. The whole flap was therefore replaced in its original bed. Ten months later when a new skin tube was formed, the result was completely successful except for a small fistula, which was readily excised. The denuded areas on the chest were grafted.

The patient is now able to eat and drink normally, and the X-ray shows a patent and functioning new œsophagus and a normally acting stomach.

FRANK B. BERRY, M.D.

# SURGERY OF THE ABDOMEN

## ABDOMINAL WALL AND PERITONEUM

Worms, G Peritoneal Syndromes at the Beginning or in the Course of Acute Articular Rheumatism (Syndromes péritonéaux au début ou au cours du rhumatisme articulaire aigu) *Bull et mém Soc nat de chir*, 1930 141 457

It has been generally believed that acute articular rheumatism, although often involving serous membranes, does not affect the peritoneum. However several recent publications mention the possibility of peritoneal involvement in Bouillaud's disease. Sometimes the peritoneal involvement occurs in the midst of an attack of articular rheumatism. Under such conditions its nature may be suspected. In other cases its symptoms are the chief symptoms and their cause may not be determined. In still others the symptoms suggest the presence of appendicitis or visceral perforation and their cause is revealed only by the later development of typical articular rheumatism and the effect upon them of saline treatment.

Three cases are reported. A typical case was that of a young man who entered the hospital with the signs of acute appendicitis. Several hours previously, when he was recovering from a sore throat, he was seized suddenly with vomiting and violent pain in the right iliac fossa. The abdomen was painful on pressure and very tense. The pain was most severe in the region of the appendix. The temperature was 39 degrees C. and the pulse 120 and quite small.

At operation a small amount of yellow fluid escaped from the incision on the external edge of the rectus but no granulations were found on the intestine or the parietal peritoneum. Only the serosa was inflamed. There were no adhesions old or new. The appendix appeared normal and was found normal on histological examination after its removal.

After the operation the local symptoms ceased but the temperature remained at about 39 degrees C. Suddenly the patient complained of pain in the shoulder and elbows. Under the daily administration of sodium salicylate the disturbances ceased in a few days.

The author reviews the literature and quotes some of the case reports at length. Pilod says that in peritoneal reactions of rheumatismal origin the abdominal pains are more diffuse or occur higher up than in appendicitis, the contracture of the wall is not so great, and vomiting is rare or absent. However appendicitis may come on in the course of or following so called rheumatismal angina. The association of appendicular disturbances and lesions of the tonsils is common, especially in the young.

PAGE

Faulkner R L and Everett H S Tuberculous Peritonitis A Statistical and Clinical Study of 187 Cases *Arch Surg*, 1930, ix 664

The authors made a study of the data regarding 187 cases of tuberculous peritonitis which were treated on the gynecological service of the Johns Hopkins Hospital, Baltimore, in the period from 1889 to 1927. They found that the disease occurs twice as frequently in colored women as in white women, and that the decrease in its frequency since 1889 has been more noticeable among white women. The disease is most common in the second, third, and fourth decades of life. There is no striking etiological relationship between pregnancy and tuberculous peritonitis.

The disease may present all possible variations in the severity of its clinical manifestations, but in the majority of cases it runs a chronic course. Pain is the most constant symptom, and ascites the most suggestive sign.

Active pulmonary tuberculosis frequently precedes or follows tuberculous peritonitis. Since the use of the roentgen rays, healed tuberculous lesions in the lungs are found with increasing frequency. Active pulmonary involvement while the patient is in the hospital after operation for tuberculous peritonitis seriously affects the prognosis during the first five years after the operation.

All of the tubes removed from women with tuberculous peritonitis showed tuberculosis of the endosalpinx. It appears that in the adult female the tubes are usually the primary abdominal focus of the peritoneal disease.

Tuberculosis of the endometrium was found in about half of the cases in which the endometrium was examined but in most of these cases the disease was very extensive. Leucorrhœa and amenorrhœa are frequently associated with involvement of the endometrium, but there are often other causes such as extensive pulmonary disease and destruction of the ovaries to account for the amenorrhœa.

The ascitic disseminated type of tuberculous peritonitis is usually treated by exploratory laparotomy with evacuation of the fluid. The cause of death in this type of the disease is usually pulmonary involvement. When treatment is given in a good sanatorium the prognosis is excellent.

Patients with the adhesive cystic variety of tuberculous peritonitis and pelvic masses are treated by removal of the diseased adnexa if possible. If this is not possible exploratory laparotomy is done. The prognosis is good if the tubes are completely extirpated. Pulmonary tuberculosis is the menace in the cases of short duration.

Tuberculous peritonitis with secondary infection is the most severe type of the disease. If surgical

drainage is instituted promptly, some of the patients may live, but fistulae frequently follow the necessary use of drains. Pulmonary tuberculosis is not a factor. Mixed infection occurs as a rule only in persons suffering from a very old advanced peritoneal tuberculosis who would probably have succumbed earlier if there had been much active pulmonary infection.

In the induction of anesthesia for operation in cases of tuberculous peritonitis, ethylene is to be preferred to ether on account of the frequency of pulmonary involvement. Whenever possible, operation should be followed by prolonged care in a sanatorium.

MANUEL E. LICHTENSTEIN, M.D.

**Primäres Chronisches Mesenterische Lymphangitis als ein Abdominal Focal Infektion und Connecting Link for the So Called Second Disease of the Abdominal Cavity** (Die chronische Lymphangitis mesenterialis als abdominale Herdinfektion und Verbindungsglied zwischen der sogenannten zweiten Krankheit der Bauchhöhle). 54. Tag d. deutsch. Ges. f. Chir., Berlin, 1930.

This report is based chiefly on chronic appendicitis. Whereas in acute appendicitis the disturbances are as a rule entirely relieved by operation, in cases in which an interval operation is done and those in which operation is performed for chronic appendicitis, they persist. The author attributes persistence of the disturbances to inflammation of the glands in the ileocecal region which he calls "chronic mesenteric lymphangitis." He states that in some cases this condition may be entirely responsible for the clinical picture of chronic appendicitis. It is found also at operation on the biliary passages, particularly in empyema of the gall bladder.

There is a distinct difference between disease of the intestinal wall and lymph node involvement. When the wall is markedly involved the lymph nodes are only slightly enlarged, and when the wall is only slightly involved the lymph nodes are markedly enlarged. Similar observations have been made in tuberculosis in the same region.

The author reports several cases in which lymph node involvement and lymphangitis were found at operation for gall bladder disease and appendicitis. He emphasizes that these conditions should be borne in mind as they frequently produce stormy symptoms. They constitute an additional reason for early operation. In definitely chronic lymphangitis more conservatism is justified and X-ray therapy may be adequate.

STETTINER (Z)

**Pauchet, V. Bécart, A., and Gachlinger, H.** Chronic Fever as a Symptom of Epiploitis (La fièvre chronique, symptôme d'épiploite). *Bull. et mém. Soc. de chirurgiens de Par.*, 1930, *xxii*, 319.

Experience has shown that in a great number of gastro-intestinal infections the omentum is involved, probably through the lymphatics. In 1919, Duroselle reported that in 105 operations for chronic appendi-

citis associated with interventions on the cæcum, colon, bladder, or kidneys, epiploitis with lesions visible to the naked eye was discovered in 78.

The symptoms of epiploitis are often confused with those of chronic appendicitis. They include various digestive disturbances, constipation, and continuous fever. The authors report 4 cases of fever of epiploic origin.

In the discussion, HALLER referred to his report of 3 cases of crises of pseudo appendicitis in the course of chronic epiploitis and emphasized that in operations for chronic appendicitis the abdomen should not be closed without examination of the omentum.

THEVENARD reported that he had recently seen a case of chronic epiploitis with an attack simulating acute appendicitis. In all operations for inflammatory lesions of the abdomen he resects the omentum if it shows any important lesions. He believes that by so doing he has prevented many postoperative sequelae.

FLORENCE A. CARPENTER

## GASTRO-INTESTINAL TRACT

**Berg B. N., and Jobling J. W.** Biliary and Hepatic Factors in Peptic Ulcers. An Experimental Study. *Arch. Surg.*, 1930, *xx*, 997.

Boldyreff promulgated the theory that gastric acidity is regulated by regurgitation of the contents of the duodenum into the stomach. He noted that the pancreatic juice is more alkaline than any of the other secretions present in the duodenum and concluded that it is the chief factor in the neutralization of the acid secreted by the stomach. However, other investigations indicated that changes in gastric acidity do not depend on the regurgitation of alkaline duodenal juices. Recent determinations of the gastric acidity in animals with pancreatic or biliary fistula showed that the acid values remained within the limits of normal variations for dogs, after biliary obstruction the acidity was increased.

The investigation reported by the authors dealt with the experimental production of duodenal and gastric ulcers in dogs by interference with the flow of bile into the intestine, and the possible significance of the results with respect to peptic ulcers in man.

After the establishment of uncomplicated biliary fistula in seven dogs, acute duodenal lesions were found in four of the animals. Of eleven dogs in which the formation of a biliary fistula was followed by biliary obstruction, similar lesions were found within three months in six, and of five dogs in which biliary obstruction was produced at once, similar lesions were found in three. Therefore, of twenty-three dogs with various types of biliary exclusion, thirteen developed duodenal or gastric lesions. In ten dogs, ulcers were found in the duodenum, in two dogs, multiple gastric erosions, and in one dog, both gastric and duodenal ulcers. In one dog a chronic duodenal ulcer was found after an interval of twenty-six days. This suggests the possibility that, in man, gastric and duodenal ulcers with the

histological characteristics of chronic lesions may develop within a short period of time. Abscesses of the liver and pericholangitis occurred in some of the animals but did not seem to have any influence on the development of ulcers.

The results of this investigation suggest that alterations in the function of the liver and the secretion of bile may be important factors in the etiology of peptic ulcers. Although gross or microscopic changes in the biliary tract are found in only a small percentage of cases of ulcer in man, functional disturbances not recognized by the methods used today may exist. The periods of remission and exacerbation which characterize so-called chronic ulcers may coincide with intermittent functional alterations in the stomach and duodenum in response to changes in the liver and biliary system. If peptic ulcer is associated with deficiency of the liver in man the administration of liver may be of therapeutic value. The results obtained from preliminary studies suggest that treatment with liver has a beneficial effect. MORRIS H. KARN, M.D.

Aue H. and Čeculín A. The Experimental Production of Gastric Ulcer with Radium Emanation (Experimentelle Erzeugung des Magengeschwürs durch Radiumemanation). *Arch f klin Chir* 1930 civiii 143.

By means of a trocar the authors introduced under the serosa of the stomach of each of fourteen dogs from five to seven glass tubes from 0.8 to 1.0 cm. in length and with a total content of from 3.0 to 7.0 mc. of radium emanation. The tubes were introduced in such a way that they surrounded a definite portion of the stomach wall measuring 2 by 3 cm. The operation was well tolerated by the animals. Four of the dogs died and the others were killed. In all there was a crater shaped round or oval gastric ulcer with overhanging margins, a typically penetrating lesion associated with changes in the shape of the stomach which produced an hour glass constriction or the retention stomach depending upon whether the lesion was located in the body or the outlet of the stomach. The ulcer was always at the point of origin of extensive adhesions to adjacent organs.

The microscopic findings corresponded fully to those of gastric ulcer. All layers of the wall down to the serosa were disintegrated and the floor of the ulcer defect was formed by a firm cicatricial tissue. The epithelium near the ulcer defect was undifferentiated. Some of the cells showed hyperchromatic nuclei. Gastric epithelium with mother cells and delomorphous cells was to be found only at a distance from the ulcer. The gland ducts were very long tortuous and cystically dilated. It was especially significant that the vessels in the immediate neighborhood of the ulcer showed thickening of the intima and often of the media and evidences of obliteration with subsequent recanalization.

The clinical course was divided into an acute period and a chronic period. In the acute period

which lasted for from one to two months there was a tendency toward hemorrhage and perforation. Four of the dogs died in the acute period. In the chronic period the attacks of vomiting ceased, but the stomach became dilated to from three to four times its normal size although it retained the ability to empty itself.

After the operation in the chronic stage the total acidity and the content of free hydrochloric acid of the 'fasting' 'psychic' and 'nutrition' gastric juice was lower than before the operation but the secretion was increased. MAX BUDDE (Z)

Mercken F. A Krukenberg Tumor of the Left Ovary in a Case of Linitis Plastica (Tumeur de Krukenberg de l'ovaire gauche consécutive à un cas de linitis plastique). *Bruvelles méd*, 1930 x 813.

The case reported by the author was that of a woman thirty years of age who had had three pregnancies. At the age of twenty four she had suffered from epigastric distress and two months after her last confinement this pain had recurred. It was then severe and diffuse and associated with frequent regurgitation and diarrhea alternating with constipation. There was no blood in the stools. X-ray examination revealed dilatation of the stomach and a stricture at the pylorus due to a callous ulcer.

At laparotomy a large freely movable tumor was found at the pylorus. A Billroth II operation with the Kroenlein Mikulicz modification (gastroenterostomy) was done. After the operation the patient developed bronchopneumonia but recovered and left the service on the eleventh day. On microscopic examination of the specimen Mason made a diagnosis of linitis plastica on the basis of pyloric ulcer.

A year and a half later the patient presented herself at the gynecological clinic with a swelling in the side of the abdomen. A diagnosis of cyst of the ovary was then made. At operation a large lobulated tumor the size of a fetal head was found attached to the left ovary. The right ovary showed cystic degeneration. Five months later the patient had a recurrence of symptoms and died of multiple metastases. Histological examination of the ovarian tissue showed a number of mucous cells in an abundant stroma rich in fixed cells.

The apparently gastric origin of this Krukenberg tumor shows that at every operation for ovarian tumor the gastro intestinal tract should be examined and that at operation for gastro intestinal tumors the ovaries should be examined.

JACOB E. KLEIN, M.D.

Walters W. Physiological and Chemical Studies Following Successful Total Gastrectomy for Carcinoma. *J. Am. M. Ass.* 1930 xcvi, 132.

The indications for and advisability of total gastrectomy for carcinoma of the stomach and the postoperative results present many interesting problems for investigation among which are the effect of the loss of the acid and chloride normally secreted

by the stomach and the explanation of the secondary anæmia which has been reported as having occurred as long as three years after the operation

At the Mayo Clinic, a gastrectomy is classified as a total gastrectomy only if no portion of the stomach is allowed to remain. The entire stomach, including the cardiac and pyloric sphincters, has been removed for carcinoma eight times at the Mayo Clinic. Four of the patients recovered from the operation. The patient on whom Walters operated has been well for more than four months. The operation was performed for an extensive scirrhous carcinoma of the linitis plastica type. Studies of the chemical changes in the blood and of the cell count over a period of four months have revealed no appreciable change in the content of hæmoglobin, the carbon dioxide combining power, the concentration of blood chlorides or urea, or the number of erythrocytes. No evidence of a definite alkaline tide has been found. This is of interest as it has been recognized that with the secretion of gastric juice in a normal person the urine tends to become more alkaline. The findings made in Walters' case so far appear to indicate that the lack of a stomach and its acid-secreting glands has a definite effect on the morning alkaline tide.

The absence of secondary anæmia in experimental animals after total gastrectomy performed more than four years ago raises the question whether the cause of secondary anæmia in human beings subjected to total gastrectomy is the result of local recurrence of the malignant growth or a remote metastasis. Brigham, Moynihan and Mayo have reported cases of great interest in this respect. In Brigham's case, in which the anastomosis was between the œsophagus and the duodenum, the patient was well for two years following total gastrectomy and the normal formula of the blood was not affected. In Moynihan's case, that of a patient who lived three years and eight months after the operation, marked anæmia occurred, but no evidence of recurrence of the carcinoma was found at post-mortem examination. In the case in which gastrectomy was performed successfully by W. J. Mayo, the patient lived for almost four years after the operation, but developed marked secondary anæmia before death.

Balfour, D. C., and McCann, J. C. *Sarcoma of the Stomach*. *Surg., Gynec. & Obst.*, 1930, 1, 948

This article is a clinical analysis of fifty-four cases of sarcoma of the stomach seen at the Mayo Clinic in the period from January, 1908, to July, 1929. All but one case came to operation. The average age of the patients at the time the diagnosis was made was forty-three years. The ratio of males to females was 25:1. In only four instances was a family history of malignant disease elicited.

The average duration of the symptoms before operation was eighteen months. The complaints at the time of examination were dyspepsia, pain, tumor, bleeding, weakness, and vomiting. Thirteen

patients gave a history of gastro-intestinal hæmorrhage. Free hydrochloric acid was present in the gastric contents of 60 per cent. Before operation was performed the majority of the lesions were diagnosed as carcinoma of the stomach. The tumor could be removed surgically in thirty-six of the cases and was irremovable in fifteen, the operability being therefore 66 per cent.

The treatment consisted, when possible, of partial gastrectomy followed by the administration of Coley's toxins and in suitable cases, irradiation with the roentgen rays.

The tumors varied considerably in size and were of several types. Neither the type of tissue nor metastasis threw much light on the prognosis.

The immediate operative mortality in the whole group was 13 per cent.

The postoperative duration of life in the cases in which only exploration was done averaged four months. The average postoperative duration of life of the patients subjected to resection was eleven months. The average postoperative duration of life of the twelve patients who were living when information was last received regarding them was five years. One patient has lived nine years.

Rankin, F. W., and Mayo, C., 2nd. *Carcinoma of the Small Bowel*. *Surg., Gynec. & Obst.*, 1930, 1, 959

Judd, in his article on carcinoma of the small intestine, reported on the cases at the Mayo Clinic up to the year 1919. Rankin and Mayo carry the report through 1919 to October 1, 1929, adding thirty-one cases and bringing the total number up to fifty-five.

Carcinoma of the small intestine is rare. At the Mayo Clinic it represents 1 per cent of the cases of carcinoma of the gastro-intestinal tract. The primary signs and symptoms are directly related to intermittent obstruction and secondary anæmia. The duration of the symptoms varies in different cases, but averages fourteen to fifteen months. A movable tender mass that slips away from the fingers should arouse suspicion. Constipation tends to be a rather constant symptom and to become increasingly obstinate, but occasionally is interrupted by attacks of diarrhea. Just why a tumor in the small bowel, the contents of which are liquid, should influence constipation is not apparent. Certainly, it does not cause a mechanical obstruction until the very last stages. In suspicious cases repeated tests for occult blood are important. In the present state of our knowledge, roentgenological examination is of particular importance only from a negative standpoint, but it seems likely that future progress along diagnostic lines will make it more accurate and definite.

When a carcinoma of the small bowel is removable, the treatment indicated is resection with re-establishment of the continuity of the lumen of the bowel. When, because of attendant obstruction, it is not removable or resectable, entero-anastomosis excluding the pathological lesion is the procedure of choice. Occasionally, resection with anastomosis is justified.



in the presence of metastasis as it may sometimes be accomplished in a mobile segment of bowel almost as readily and with as little danger of contamination as an excluding palliative anastomosis.

In resecting a segment of bowel which is to be rejoined and in which conditions are favorable the authors have employed an aseptic type of anastomosis over a three bladed clamp which was devised by one of them (Rankin) and has been used satisfactorily in a large series of resections of the large bowel. With the exception of traumatic lesions conditions of the small bowel that demand resection are so exceedingly rare that opportunity to use this clean method of anastomosis in the small intestine has been relatively infrequent. However it was employed three times in the series of cases reviewed. An end to end anastomosis was done in two cases and a lateral anastomosis in one case. The choice between end to end and lateral anastomosis to re-establish the continuity of either the large or small bowel must be settled in each case according to the preference and experience of the operator. In most cases and certainly in lesions of the small bowel, end to end anastomosis is the method of choice.

The advantages of an aseptic type of anastomosis are not satisfactorily established but it seems evident that the more cleanly the joining of two sections of bowel the less the chance of peritoneal contamination and therefore the more satisfactory the outcome should be. The clamp method of aseptic anastomosis has proved simple and satisfactory.

In end to end anastomosis which is the simplest method of joining the bowel the steps are relatively few and easily accomplished. They consist of (1) ligation of the vessels supplying blood to the segment to be removed (2) the application of both blades of the clamp with the inclusion of a loop of small bowel in each blade after examination to make sure of the blood supply to each end (3) removal of the affected segment with the cautery after the application of another clamp above the Rankin clamp (4) the application of a row of sutures around the entire circumference of the bowel before withdrawal of the clamp (5) withdrawal of the clamp and tying of the sutures (6) the application of a second row of sutures around the entire circumference of the bowel (7) closure of the mesenteric defect and (8) the breaking out of a diaphragm by invaginating a finger through the anastomosis.

If the suture is placed through only the sub-peritoneal coats the operation of resection may be accomplished absolutely without contamination. The clamp is strong enough to cause sufficient pressure to control hemorrhage from the end cut into in the bowel and agglutination keeps the end of the bowel closed until the suture is drawn taut thus preventing leakage. Secondary hemorrhage stricture and leakage have not occurred in any of the cases in which resection of the large or small bowel was accomplished by this method. The simplicity and satisfactory results of the procedure recommend its continued use.

The prognosis in carcinoma of the small bowel whether the growth is apparently suitable for resection or the operation is palliative is unsatisfactory, and the length of life even following resection, is short.

Shoemaker. Periduodenitis (Periduodenitis). 54 Tag. *d. deutsch Ges. f. Chir.*, Berlin 1930.

Two types of periduodenal adhesions are to be differentiated (1) more or less firm bands leading to the duodenum and (2) delicate veil like accumulations on the duodenum. The first are usually secondary to inflammatory processes. The second have no relation to inflammation. They are congenital but may acquire pathological importance when they narrow the duodenum. They frequently produce symptoms suggesting ulcer, but typical ulcer manifestations such as the characteristic hunger pain are absent and an ulcer diet does not give relief. Rest is beneficial. Movement causes recurrence of the pain. Psychic disturbances also have an unfavorable influence. Operation reveals the veil like membranes on the duodenum, but as a rule nothing abnormal in the stomach or gall bladder. In two cases seen by the author the membranes had undergone a band like thickening and had narrowed the duodenum. There is usually an associated marked hyperemia.

The membranes may be found also in other locations as on the caecum (Jackson's membrane) and on the ascending colon extending as far as the hepatic flexure or the middle of the transverse colon and thence to the duodenum. They therefore occur at the points where the intestine turns in the early stages of development. Occasionally they lead to the liver and gall bladder. They may also spread out from the duodenum over the stomach thereby producing the picture described as 'red stomach'. The red stomach is not dependent upon inflammation. Only a hyperemia is present, but the patient complains of pain and discomfort.

The vegetative nervous system is involved sympathetically. The organs show no internal changes. Therefore operation is contra indicated even when the diagnosis is definitely established. Rest, anti-nervine and diathermy are of value in the treatment. If operation is undertaken only band like adhesions should be removed. If the gall bladder is covered by them, its removal must be considered. It is wrong to perform a gastro-enterostomy in such cases unless a definite stenosis is present. Of ten cases treated by the author the membranes were removed in only three. Two of the three cases were cured. In the third the symptoms recurred. Operation should be avoided especially in cases in which nervous influences play an important part.

In the discussion of this report WANKE stated that he regards all periduodenal membranes as congenital. He called attention to the numerous anomalies which may occur.

HAMMESFAHR reported that he performed vagotomy by the Braeucker method in periduodenitis.

with satisfactory results in 60 per cent of the cases. He offered no explanation for the effect of this operation.

GOLEKE stated that he had often found hyperplasia of the mesenteric glands in these cases and believes that the symptoms are due to irritation of the vegetative nervous system produced by the enlarged glands.

BORCHARDT reported that Jaffe found the membranes in from 10 to 15 per cent of autopsies performed at the Moabit Hospital. In these cases the interior of the organs showed no changes.

CLAIRMONT stated that in his opinion the hyperemia and adhesions described by Shoemaker are inflammatory manifestations of a local peritonitis.

ANSCHUTZ agreed with Shoemaker as to the advisability of a conservative attitude in the treatment of periduodenitis, but stated that under some conditions the X ray findings warrant operation.

STETTNER (Z)

Finsterer: What Does Resection for Exclusion Offer in Non Resectable Duodenal Ulcer? (Was leistet die Resektion zur Ausschaltung beim nicht resezierbaren Ulcus duodeni?) 54 Tag d. deutsch Ges. f. Chir., Berlin, 1930

For the treatment of duodenal ulcers which can not be resected without great danger because of their anatomical extent (encroachment on the common duct or the ampulla), the author has advocated for the last twelve years, resection for exclusion. This operation consists of division and closure of the stomach just in front of the pylorus, with or without resection of the pylorus, a procedure which assures healing of the ulcer by totally excluding it and the resection of a large part of the stomach (two thirds), which should prevent the development of peptic ulcer of the jejunum.

The frequency of non resectable ulcers of the duodenum in a series of cases depends upon the nature of the material (number of penetrating ulcers) and the indications recognized by the surgeon. It varies from 7 per cent (Hahner) to 53 per cent (Delore). Of 757 cases of duodenal ulcer treated in the period from 1913 to 1929 (exclusive of perforating ulcer), the author resected the ulcer in 599, performed a resection for exclusion in 126 (16.6 per cent), and did a gastro enterostomy in 32 (4.0 of the gastro enterostomies were done in 1913). In 93 resections for exclusion without removal of the pylorus the mortality was 2.1 per cent (1 death from perforation of the ulcer and 1 from peritonitis) and in 34 similar resections in which the pylorus was removed it was 17.7 per cent (3 deaths from peritonitis and 2 from subphrenic abscess due to inadequate closure of the duodenum). In the past six years drainage has been employed whenever closure of the duodenum has been insecure, and during this time there have been no deaths and 4 duodenal fistulae have healed spontaneously.

The late results of resection for exclusion depend primarily upon the extensiveness of the gastric re-

section. Only the cardiac third of the stomach should be left. Therefore, when there is great dilatation involving only the antrum, two thirds more of the stomach are removed because the line of resection always remains the same—on the lesser curvature, near the cardia, and on the greater curvature, a hand's breadth to the left of the center.

Of 70 patients subjected to gastric resection with preservation of the pylorus 63 (90 per cent) are entirely free from symptoms after from three to fourteen years. They are able to eat any kind of food and to work, and have gained considerable weight (as much as 30 kgm.). Two are relieved, and 5 are not relieved. In the cases of 3 who were operated upon in 1919, only a small resection (antrum) was done. In 2 cases in which an extensive resection was done the inflamed gall bladder which was adherent to the ulcer was left behind and the patient failed to return for the advised secondary cholecystectomy. Of 18 patients subjected to simultaneous resection of the pylorus, 12 are cured, 3 are relieved and 3 are not relieved.

Permanent recovery requires, in addition to extensive resection, the prevention of retrograde filling of the duodenum. The latter is best attained by the modification of the Billroth II method employed by Hofmeister and the author (retrocolic gastro enterostomy with the orifice on the greater curvature). The Reichel Polya modification, in which the entire cross section of the stomach is used for the anastomosis, frequently gives rise to symptoms from retrograde filling. In the presence of a mobile descending portion of the duodenum, even less extensive gastric resection will prevent peptic ulcer of the jejunum with absolute certainty and recurrent duodenal ulcer with almost absolute certainty. Following more extensive resections the symptoms of small stomach disappear after from six to twelve months because of marked dilatation of the jejunal loop.

In conclusion the author says that many more patients with duodenal ulcer can be permanently cured and restored to their vocations by resection for exclusion than by simple gastro enterostomy, which fails in from 30 to 50 per cent of cases. Therefore, resection for exclusion, which gives a permanent cure in 90 per cent of cases and can be readily performed by any surgeon, merits preference over gastro enterostomy.

STETTNER (Z)

Schofield, J. E. Carcinoma of the Duodenum. *Brit. J. Surg.*, 1930, viii, 84.

Schofield cites 36 cases of carcinoma of the duodenum reported in the literature which were found in a total of 130,990 autopsies. He states that there would have been more if cases of pyloric cancer involving the duodenum had been included.

Although the duodenum is remarkably resistant to cancer, it is the segment of the small intestine most frequently involved by malignancy. The ampullary region is affected by far the most frequently. Perhaps such a sharply localized malignant

lesion could be as easily classified as a bile duct carcinoma. The symptoms are mainly those of obstruction of the common bile duct. The diagnosis most frequently made in this condition is carcinoma of the head of the pancreas. The symptoms of supra ampullary carcinoma are very similar to those of pyloric cancer. Infra ampullary carcinoma presents the usual picture of duodenal obstruction. Duodenal ulcer is probably not a predisposing cause of duodenal carcinoma as most ulcers are supra ampullary whereas most cancers are ampullary. Moreover, the high incidence of duodenal ulcer is incompatible with the rarity of duodenal cancer.

Supra ampullary duodenal carcinoma can be treated in the same way as pyloric cancer. Ampullary cancer may be treated palliatively by internal biliary drainage or radically by excision of the growth or resection of the duodenum. Radical treatment, however, is attended by a very high mortality. Cancer in the infra ampullary region is best treated by resection.

Schofield reports a case of infra ampullary carcinoma which was accompanied by jaundice because the growth extended to the ampulla. A posterior gastro-enterostomy and a cholecystoduodenostomy were done as palliative treatment. Six weeks later radon seeds were implanted in the growth by the transduodenal route. Death resulted from a duodenal fistula. The lesion was definitely proved to be an adenocarcinoma by examination of a section taken at the first operation. No cancer cells could be found in the autopsy specimen. The action of the radon seeds, which destroyed the cancer cells, may have been a factor causing the duodenal fistula.

LARL GARLIDE M.D.

Chauvin M. L. Cæcovesical Fistula of Appendicular Origin (Fistule caeco vesicale d'origine appendiculaire). *Bull. et mém. Soc. nat. de chir.*, 1930 141, 359.

A woman thirty two years of age presented herself for examination with the symptoms of serious cystitis of sudden onset. She had had a nephrectomy seven years previously, but the kidney showed only chronic nephritis. The painful phenomena in the right iliac fossa were like those of Koehlg's syndrome. Palpation of the lower abdomen caused severe pain and marked muscular rigidity. The point of maximum tenderness was over McBurney's region. A painful swelling was palpable in the right vaginal cul de sac. Roentgen examination showed the cæcum to be fixed and the ascending colon to be irregular and painful on palpation. The roentgen diagnosis was adhesion of the colon and cæcum to the bladder with possibly a vesicocæcal fistula.

At operation, a mass of intestine was found packed into the pouch of Douglas. When this was freed a cæcovesical fistula was discovered about 1 cm. from the base of the appendix. The orifices in the cæcum and bladder were closed separately. The removed appendix was found to be obliterated and sclerosed. Uneventful recovery resulted.

Cæcovesical fistula of inflammatory origin is much less common than neoplastic or tuberculous fistula and is more adaptable to surgical treatment and suture. Appendicitis is believed to be the most common cause. Absence of a direct communication of the lesion with the appendix does not rule out the responsibility of the latter. Peri appendicular abscess causes a matting together of the neighboring intestinal loops which may form a communication with the bladder.

The three characteristic symptoms of cæcovesical fistula are (1) the passage of faecal matter into the bladder or of urine into the intestine (2) pneumaturia and (3) a fistulous orifice which can be seen with the cystoscope. However, pneumaturia is often absent in cases of inflammatory fistulae and intense cystitis may prevent cystoscopic examination.

JACOB E. KLEIN M.D.

Miller C. J. A Consideration of the Mortality of Acute Appendicitis with Special Reference to 239 Fatalities. *J. College Surg. Australasia*, 1930 31 40.

The author's findings in a study of 239 fatal cases of acute appendicitis collected at the Charity Hospital and the Touro Infirmary, New Orleans, may be summarized as follows:

1 The incidence of appendicitis decreases but the mortality increases after the age of thirty years. The increase in the mortality is due to a difference in the pathological changes which cause atypical symptoms, delay of operation and more complications.

2 It negates the incidence of appendicitis is much lower but the mortality of the condition is greater than in whites.

3 In 86.5 per cent of the fatal cases operation was delayed more than twenty four hours.

4 The mortality between the third and fifth day after operation did not seem to be any greater than in other periods.

5 In most of the fatal cases purgatives had been used. Purgatives were used more frequently by the more intelligent patients than by the others. In many cases a purgative had been given by a physician.

6 Most of the delay of operation was due to difficulty of diagnosis.

The author points out that only about half of the cases are typical. He then evaluates the various symptoms.

Pain may not be localized or follow the typical course. The cessation of pain indicates gangrene.

Nausea and vomiting are common. Chills indicate a marked constitutional reaction. The onset of symptoms is frequently preceded by dietary indiscretions.

Tenderness and rigidity are most common findings although a dead appendix may not be tender and the rigidity reflex is exhaustible.

The temperature, pulse rate and leucocyte count are too variable to help in the diagnosis. A high polymorphonuclear count indicates pus.

The general hospital mortality of appendicitis today is about 10 per cent—no better than it was fifteen years ago. The causes of high mortality are

- 1 The habit of self medication
- 2 An atypical order of symptoms. Many internists insist on delaying operation until the development of typical symptoms although these may never appear or may appear too late
- 3 The frequent performance of appendectomy by surgeons without the requisite skill and judgment
- 4 Delay of operation MAURICE L. DAFE, M D

Ryan, T J The Mortality from Appendicitis  
*Ann Surg*, 1930, xci, 714

Ryan quotes life insurance statistics to show that although the operative mortality in acute appendicitis is decreasing, the mortality from the disease itself is increasing. The increase is most marked between the ages of two and ten years. Ryan attributes it to failure of the present day surgeon to profit from the experience of the past generation with regard to the time operation should be done.

In a series of 100 cases treated by Ryan the mortality was 4 per cent. Pain in the right iliac fossa was present in 91 per cent, generalized abdominal pain in 8 per cent, pain on the left side in 1 per cent, leucocytosis in 88 per cent, increased pulse rate in 87 per cent, fever in 83 per cent, nausea in 55 per cent, vomiting in 46 per cent, and rigidity in 60 per cent. The clinical diagnosis was verified by the pathological diagnosis in 90 per cent.

The McBurney incision is superior to the right rectus incision because it is better for drainage.

ARTHUR H. KLAUANS, M D

Mazza, S Spirochaetosis of the Appendix (Espirorquetosis appendicularis) *Bol inst de clin chir*, 1930, vi, 328

Intestinal spirochetes, although found in the faeces of apparently healthy persons may sometimes be pathogenic since in cases in which their presence is associated with symptoms, the symptoms are relieved when the spirochetes disappear under treatment with arsenic and bismuth. Of 394 cases in which the appendix was removed on account of chronic appendicitis or as a prophylactic measure at operation on some other abdominal organ, spirochetes were found in the immediately examined contents of the appendix in 38 (9.6 per cent). In 26 (6.6 per cent) of the 38 appendices with spirochetes, the spirochetes were found in almost pure culture in very large numbers. In 3 cases (7.8 per cent), they were associated with blastocystis hominis, in 8 cases (21 per cent), with trichomonas intestinalis, and in 1 case (2.6 per cent) with both trichomonas intestinalis and blastocystis hominis. In spite of the usual frequency of entamoeba histolytica in the region of the appendix, this microorganism was not discovered in a single instance. With the exception of 3 cases in which the spirochetes were found also in the faeces, they were limited to the appendix.

The blood count was polymorphonuclear neutrophils, 62 per cent, lymphocytes, 28.5 per cent, eosinophiles, 3.5 per cent, mononuclears, 4 per cent, and basophilic polymorphonuclears, 0.5 per cent. There was a leucocytosis of 14,000.

Infection of the appendix by spirochetes occurs by the ingestion of infected food or water. In none of the cases reviewed was there Vincent's angina or alveolar pyorrhea with spirochetes to indicate a buccal origin of the condition.

Histological examination reveals intrafollicular haemorrhages marked infiltration of the submucosa by eosinophilic and in some cases, chronic fibrous lesions with atrophy of the mucosa.

In the absence of acute clinical and pathological phenomena, the condition should be designated as appendicular spirochaetosis rather than as spirochaetic appendicitis. When appendectomy is not followed by satisfactory improvement, treatment with arsenic and bismuth should be given.

RICOL DE LA GARZA, M D

#### LIVER, GALL BLADDER PANCREAS, AND SPLEEN

Koster, H., Goldzieher, M. A., and Collens W. S.  
The Relation of Hepatitis to Chronic Cholecystitis *Surg, Gynec & Obst* 1930, l, 949

Small pieces of tissue removed from both the right and the left lobe of the liver in twenty-seven cholecystectomies were examined histologically for evidence of hepatitis. Many conspicuous perivascular foci of cell infiltration and a larger than normal number of Kupffer cells were found. These changes were interpreted as indicating interstitial hepatitis of varying intensity localized chiefly in the periportal connective tissue.

The authors do not agree with Graham that there is a primary infection of the liver with spreading of the inflammatory process to the gall bladder through the lymphatics. They accept his histological findings, but believe that the gall bladder lesion precedes the development of inflammatory changes in the liver. The mechanism of the production of the gall bladder infection still remains doubtful, but it seems most probable that the infection is brought about by bacteria laden bile. When once developed in the gall bladder, the infection spreads to the liver through some of the lymphatics which drain into the liver. The longer this process has been going on the more marked are the signs of hepatitis and the more unlikely it is that the symptoms will be completely relieved by cholecystectomy. This fact alone is an important reason for earlier surgical treatment of gall bladder disease.

WILBUR BAILEY, M D

Murphy, G. T., and Higgins, G. M. The Emptying of the Gall Bladder Following Restoration from Acute Experimental Cholecystitis *Arch Surg*, 1930, xx, 756

At exploratory laparotomy on dogs following the intravenous injection of an acid solution of eusol

hypochlorite acute pathological lesions of varying degrees of severity were found in the wall of the gall bladder. At a second exploration performed from four to six weeks later, it was evident, at least grossly, that restoration had taken place the gall bladder being free from visible lesions. To test the emptying of the vesicle after its recovery from the inflammation its contents were aspirated through a purse string suture of blood vessel silk, an equal amount of iodized oil was introduced into the organ the animals were given the usual amount of egg yolk and cream from six to eight hours later, and X-ray observations were made frequently thereafter.

The roentgen ray studies of the emptying of the gall bladder following its recovery from acute cholecystitis revealed no appreciable differences in the reaction from that of the normal gall bladder after a fat meal and histological examination of the wall of the restored gall bladder showed no residual lesion that could in any way modify the contraction of the intrinsic muscle layer.

These experimental observations demonstrate the rapidity with which the acutely inflamed gall bladder may be restored to a functionally normal condition. They seem to substantiate the earlier observation that the primary mechanism causing the discharge of bile from the gall bladder lies within the vesicle itself. In experimental animals with acute cholecystitis all other conditions are normal. Peristalsis goes on the flow of bile remains undisturbed and there is no indication that the sphincteric mechanism at the duodenal end of the common bile duct is under unusual tonus inhibiting the flow of bile from the gall bladder. Certainly abdominal and respiratory pressure do not differ in these animals. The authors therefore conclude that the structural mechanism within the wall of the gall bladder which is known to be seriously impaired in these animals is the factor largely responsible for the inhibitory action in cholecystitis.

**Schultze W. H.** The Bacteriology of Operatively Removed Gall Bladders (*Zur Bakteriologie der operativ entfernten Gallenblasen*) *Arch f. path. Anat.* 1930 121:111-117

The author made a bacteriological study of 418 operatively removed gall bladders. 84 per cent of which were obtained from women. More than half of the women were between twenty and thirty nine years of age. In 27 of the 418 cases neither gall stones nor histological changes in the wall of the gall bladder were found and the bacteriological examination was negative. Of the 391 remaining cases in which cholelithiasis or cholecystitis was present bacteria were found in 131 (33.5 per cent). Of 110 cases in which the gall bladder presented acute inflammatory changes bacteria were found in 89 (81 per cent) and of 281 cases in which the gall bladder showed chronic changes bacteria were found in 42 (14.6 per cent).

In more than 50 per cent of the cases with bacteria the colon bacillus was present. This bacillus was

found even in gall bladders with slight changes. Next in frequency were streptococci. These were usually of the green producing, non-hemolytic variety, *Staphylococci* which were much less common occurred with about equal frequency in the acute and chronic cases.

It is evident therefore that ascending enterogenous infection of the gall bladder is much more important than descending hematogenous infection. The frequent discovery of staphylococci by other investigators is ascribed by the author to accidental contamination of the cultures.

In the development of cholelithiasis stasis of the gall bladder contents and metabolic disturbances are important in addition to infection. This is evident from the greater frequency of the condition in the female.

There are also cases of severe gall bladder necrosis characterized by freedom from bacteria and the occurrence of hemorrhages with or without gall stone formation. For lack of another explanation the author assumes that these are due to disturbances such as are associated with acute pancreatic necrosis but he is unable to offer any definite proof in support of this assumption. Booz (Z)

**Snelt A. M., Vanzant F. R. and Judd F. S.** The Complications and Sequelae of Prolonged Obstructive Jaundice. *Med. Clin. North Am.* 1930 14:111-117

The pathological changes secondary to obstruction of the common bile duct vary somewhat with the cause. The most serious clinical complications of obstructive jaundice are (1) hemorrhage (2) hepatic and renal insufficiency (3) nutritional defects (4) anemia and (5) biliary fistula. The hemorrhagic diathesis is perhaps the most feared complication of obstructive jaundice and the one chiefly responsible for the increased surgical risk. In most instances this hemorrhagic tendency is manifested only by a prolonged coagulation time and slow oozing of the blood from incised surfaces, and is brought under control by calcium chloride. In other instances, however, it is far more severe and can be controlled only by the repeated transfusion of blood.

Recent work by Tammann seems to show that in animals simple loss of all of the bile from the intestinal tract for more than six months affects the nutrition so that progressive weakness ensues with the development of extreme grades of osteoporosis. In patients who were taking their own bile, Ross and McGee noted improvement in the general condition and found an increase in the production of bile.

In one of three cases reported by the authors nutritional defects could not be explained on the basis of exclusion of bile from the intestinal tract as the stools contained bile throughout the patient's stay in the hospital. They represented, rather, an effect produced by injury to the hepatic parenchyma and therefore interference with one of the great metabolic laboratories of the body.

The major defect probably lies chiefly in the assimilation of carbohydrate. In the human subject it is seldom possible to demonstrate any striking abnormalities of protein metabolism even in advanced hepatic disease. In obstructive jaundice of long duration, low blood urea values are not infrequently found, but the significance of this observation is of course debatable. In certain advanced cases of hepatic disease there is definite failure to metabolize more than minimal amounts of protein. Although this is rare, it is undoubtedly of considerable significance.

In cases of stricture or stone of the common bile duct, multiple small abscesses probably occur in the substance of the liver secondary to dilatation and infection of the biliary radicles. If these areas enlarge or coalesce, an extrahepatic collection of pus and bile may easily perforate to form a hepaticobronchial fistula.

The cases reported by the authors illustrate the serious complications and sequelæ which attend prolonged obstruction of the bile passages. In all of them stricture of the common or hepatic bile ducts developed following an operation on the gall bladder. Chronic intermittent obstruction from stone in the common bile duct may produce an identical picture.

The cases reviewed also emphasize the importance of early surgical treatment in cholelithic disease and the care which should be taken to insure patency of the bile passages at the conclusion of operations on the gall bladder. Most serious complications may be prevented by early treatment of obstruction of the common bile duct. The hepatic injury occasioned by such obstruction is frequently, if not always irremediable if relief is too long delayed.

Okada, S., Kuramochi, K., Tsukahara, T., and Oolnoue, T. Pancreatic Function & The Secretory Mechanism of Digestive Juices. *Arch. Int. Med.*, 1930, xiv, 783.

Hypoglycæmia stimulates the gastric, pancreatic, and bile secretions, and hyperglycæmia inhibits them by a humoneuronal regulation.

Dextrose causes a diminution of the acidity of the gastric juice. Maltose has a similar but less marked effect. Levulose and galactose vary in their action. Lactose and sucrose have no apparent effect.

After total hepatectomy, dextrose, maltose, mannose, dextrin, and galactose are able to restore the moribund animal temporarily. Dextrose, however, is the only sugar which will correct the hypoglycæmia caused by insulin. It has a depressive effect on the secretion of the gastric, pancreatic, and biliary glands, and exerts this effect even after severance of both vagi.

Protein introduced into the digestive tract has no excitatory effect on the secretion of digestive juices, but the amino acids, particularly glycocoll and alanine, cause a pronounced secretion of gastric juice when they are administered intraduodenally or intravenously. This secretion is inhibited by an

injection of dextrose or atropine sulphate. In a dog in which both vagi were severed the excitatory influence of amino acids was not noted. The authors believe that on entering the circulatory system the amino acids stimulate the reacting tissue cells through the autonomic nervous center. They act therefore in a manner contrary to dextrose. The secretion of pancreatic juice and bile is at first decreased and then markedly increased after the administration of amino acids. The authors believe that amino acids stimulate the mechanism of pancreatic and biliary secretion secondarily to their humoneuronal stimulation of gastric secretion.

Fats are strong excitants of pancreatic and biliary secretion but their action is distinctly inhibited by the injection of dextrose or atropine. Fats stimulate the autonomic nervous center, and from thence the stimuli are conducted to the reacting tissue cells through the autonomic system.

It is apparent that dextrose causes an inhibitory stimulation of the autonomic nervous center, while amino acids and fats produce a secretory stimulation. Amino acids act on the center that controls the gastric secretion, while fats act on the center that controls pancreatic and biliary secretion.

The gastric, pancreatic and biliary secretions are controlled by three mechanisms, the neural, the humoral and the humoneuronal. The salivary secretion is under neural control alone. Hyperglycæmia and hypoglycæmia humoneuronally inhibit and excite the pancreatic and bile secretions. The secretion of pancreatic juice and bile is undisturbed even when the gastric secretion fails entirely, as in achylia gastrica or cancer of the stomach. Under such conditions it occurs humoneuronally in association with the neural mechanism.

STANLEY H. MENTZER, M.D.

Mussey, R. D. and Burkley, G. T. Pregnancy Following Splenectomy. *Med. Clin. North Am.*, 1930, xiii, 1453.

Splenectomy has not been practiced long enough to receive much consideration with regard to subsequent pregnancy. The replies to a questionnaire sent to a group of women who were subjected to splenectomy at the Mayo Clinic showed that after the operation twenty three of the women had thirty-two pregnancies with the birth of twenty-eight living children, two miscarriages, and two premature labors. The course of pregnancy, labor, and puerperium in this group did not show any appreciably greater departure from the normal than that of an average group of obstetrical cases. Pregnancy was followed by recurrence of symptoms only in a case of Banti's disease in which gastric hemorrhages had occurred prior to removal of the spleen and once during the pregnancy.

There seems to be slightly more than the normal hazard for the fetus, but this appears to be due to the disease for which the splenectomy was done rather than to the removal of the spleen. In the thirty-two pregnancies there were four fetal deaths.

Two babies died in the first year of life, and one child required splenectomy for hæmolytic jaundice at the age of seven years. On account of the familial tendency to the development of hæmolytic jaundice a test of the fragility of the erythrocytes should be made in the case of every child born to a parent with hæmolytic jaundice.

With regard to the safety of pregnancy after removal of the spleen on account of severe gastric hæmorrhages the authors report that of eight cases of splenic anæmia including one case in which the condition had advanced to the stage of Banti's disease severe gastric hæmorrhages occurred prior to pregnancy in four and in two of these hæmorrhages occurred during pregnancy. They state that injury to the liver which may be present in this condition and in Gaucher's disease may add to the hazard of pregnancy and that any hazard to pregnancy is probably due to the disease for which the spleen was removed rather than to absence of the spleen. In purpura hæmorrhagica removal of the spleen seems greatly to decrease the hazard of pregnancy.

#### MISCELLANEOUS

Vernengo, M. J. The Disappearance of Liver Dullness in Acute Abdominal Conditions (La desaparición de la macidez hepática en el abdomen agudo) *Semana méd.* 1930 **xxvii** 1104.

Disappearance of the usual dullness caused by the upper surface of the right lobe of the liver from the

fifth or sixth intercostal space downward (Jobert's sign) is to be regarded as a sign of free gas in the peritoneal cavity due to gastric or intestinal perforation only when it is associated with acute abdominal pain and distention.

To prove that the absence of liver dullness is caused by free gas in the peritoneal cavity it is necessary to eliminate the presence of pulmonary emphysema, pneumothorax, gaseous subphrenic abscess, marked meteorism, and the interposition of intestinal coils between the liver and abdominal wall. However, the presence of liver dullness lacks a negative diagnostic value in gastro intestinal perforation.

The longer the lapse of time since the rupture the greater the probability of disappearance of liver dullness. There is a relation between the site of the lesion and the disappearance of liver dullness. Perforated ulcer of the stomach causes Jobert's sign most often (90 per cent of the cases) and rupture of the duodenum causes it next most often (53 per cent of the cases). This sign is more frequently found after pathological perforations than after traumatic perforations. There is no relationship between the degree of disappearance of liver dullness and the size and number of perforations.

The disappearance of liver dullness has no prognostic value in itself. In the presence of liver dullness roentgenography is of great aid in demonstrating the presence of free gas in the peritoneal cavity.

RAOUL DE LA GARZA, M.D.

# GYNECOLOGY

## UTERUS

Shurman, A. Urgent Uterine Hæmorrhage of Constitutional Origin. *Brit M J* 1930, 1, 1164

Shurman reports seven cases of urgent uterine hæmorrhage in which no local or pelvic cause was discoverable and the bleeding was presumably of constitutional origin.

When the bleeding is severe and the correct diagnosis is missed at an early stage the prognosis is grave. Four of the author's patients were dead within a month of their admission to the hospital, one died within two months, and one died within six months.

The mechanism of the hæmorrhage in these cases is not clear, but the author believes it may be a disturbance of calcium metabolism resulting in an increased calcium output or a low blood calcium. He therefore concludes that in cases of severe uterine hæmorrhage without an obvious pelvic cause a systemic investigation and a detailed blood examination, preferably by a hæmatologist, should be made at the earliest opportunity. ROLAND S. CROFT, M.D.

Horgan, E. Hæmangioma of the Uterus. *Surg, Gynec & Obst*, 1930, 1, 990

Hæmangiomata of the uterus are very rare. Only twenty have been reported in the literature, and of these, only four were of the true cavernous type.

Following a review of the literature on hæmangioma of the uterus, in which he classifies the tumors reported as true hæmangioma in the wall of the uterus, hæmangiomatous fibromyomata, and telangiectatic hæmangioma of the pelvis, the author reports an additional case of the cavernous type of hæmangioma.

Horgan's patient was a woman forty six years of age who had had four children. She sought treatment because of a bloody discharge from the vagina of sudden onset. She had passed the menopause one year previously. In addition to the recent hæmorrhage, she had had an attack of severe vaginal bleeding once immediately after delivery, once a week after delivery, and three times without relation to pregnancy.

Operation disclosed a raised tumor about 5 cm in diameter in the anterior wall of the uterus. Hysterectomy was done. Section of the uterus showed large cavities filled with blood, lined by a thin layer of endothelium, and supported by connective tissue trabeculae. From one of the cavities there was a definite opening into the uterine cavity.

No treatment other than hysterectomy has been advised for this condition. The use of radium has not been reported. T. FLOYD BELL, M.D.

Turunen, A. O. I. Myoma of the Portio Vaginalis (Die Myome der Portio vaginalis uteri). *Acta obst et gynec Scand* 1930, 7, 11

The author reports 2 typical cases of myoma of the portio vaginalis which were operated upon at the Diakoniss Nursing Home in Helsingfors.

The first case was that of a woman forty six years old who had had a normal delivery twenty seven years previously. Three months before the patient entered the hospital a tumor had appeared suddenly in the genital region. There were no other symptoms. The tumor was the size of a hen's egg and originated in the anterior edge of the uterine os. Microscopic examination showed it to be a leiomyoma with fairly abundant connective tissue. In its periphery, near the capsule, there were numerous mast cells.

The second case was that of a woman thirty seven years of age who had had 2 deliveries, the last one twelve years previously. For a year before the patient entered the hospital she had had bloody leucorrhœa and amenorrhœa with constipation and a feeling of weight in the lower part of the abdomen. In this case also, microscopic examination showed the tumor to be a leiomyoma.

Up to the present time, 112 cases of myoma of the portio vaginalis have been mentioned in the literature. The author summarizes these cases in 2 tables, including in one table the cases with clinical symptoms and in the other those in which the tumors were discovered in connection with parturition. He then describes the clinical picture produced by them and their effect on the course of delivery.

Wolfe, S. A. A Mixed Tumor of the Body of the Uterus. *Am J Obst & Gynec*, 1930, 24, 816

The case reported was that of a woman fifty five years of age who complained of a foul, blood streaked vaginal discharge and an abdominal mass. A diagnosis of multiple fibroids with necrosis of a submucous tumor was made and supracervical hysterectomy and bilateral salpingo oophorectomy were performed. The removed uterus showed numerous small interstitial fibroids irregularly distributed throughout the organ and a lobular sarcoma involving the posterior, lateral, and fundal walls.

Microscopic examination of the tumor showed that the endometrium overlying the neoplasm had been destroyed. In the superficial portion of the tumor there was coagulation necrosis. The predominant cells were fusiform or spindle shaped and arranged in parallel columns, whorls, or irregular clusters. The cytoplasm was scanty and the cell bodies were poorly defined. The nuclei were large and oval or cigar shaped. Mitotic figures were numerous. L. L. CORNELL, M.D.



**Branscomb, I.** The Occurrence of Cancer of the Uterine Cervical Stump After Supravaginal Hysterectomy *Am J Obst & Gynec* 1930, **xx** 66

In the Howard A. Kelly Hospital, Baltimore the author saw 6 cases of malignancy of the cervical stump after supravaginal hysterectomy in a period of two weeks and in reviewing a series of 1804 cases of cervical malignancy he found that 46 were of this type. In 16 of the latter the malignancy developed within a year after the operation and in 30 after two years. The longest intervening period was nineteen years and the shortest a few weeks. The oldest patient was sixty nine years of age and the youngest thirty four. The average age was forty nine and three tenths years. In all instances the operation had been done for a non malignant condition—in 33 cases for myoma, in 8 for pelvic inflammatory disease in 1 for prolapse in 3 for causes not ascertainable, and in 1, for injuries sustained in an automobile accident. In all but 2 of the case histories there was a record of microscopic examination. Eleven of the tumors were reported merely as carcinomata without any statement as to the type. Of the remainder, 24 were squamous celled carcinomata, 7 were adenocarcinomata, 1 was a sarcoma and 1 was a mixed cell carcinoma. **F. L. CORNELL, M.D.**

**Kennedy, W. T.** Reconstruction of the Cervical Ligaments Following Complete Hysterectomy *Am J Obst & Gynec* 1930, **xx** 51

This report is based on 110 cases of reconstruction of the cervical ligaments following complete hysterectomy. In 99 there was primary union in 9, primary union with a slight minor defect and in 7, a major infection with granulation. In 1 case death occurred from tetanus and peritonitis and in another from peritonitis. Pneumonia occurred in 2 cases, infarction in 1 case, thrombophlebitis in 1 case, cystitis in 2 cases, pyelitis in 5 cases and colitis in 1 case.

Ninety seven of the patients were followed up. Eighty had a satisfactory result, 3 a partially satisfactory result and 2 a poor result. One died of carcinoma of the kidney two years later, 5 had a carcinoma of the fundus and 1 had a sarcoma of the fundus. Five were under treatment for a condition developing since they left the hospital. Seven had a vaginal discharge. Four had an incisional discharge which cleared up after 1 application of 10 per cent silver nitrate.

The technique of the operation described by the author is as follows:

All of the blood supply except the return flow through the fundus is ligated without clamping the pedicles distal to the ligatures being left long. Traction sutures are put in the vaginal wall anterior and posterior to the cervix. The vagina is entered behind the cervix, and the vaginal wall is cut close to the cervix. The uterosacral ligaments are ligated. The first suture of No. 2 chromic catgut includes the peritoneum, the fascia of the cul de sac and the vaginal cuff all in the midline posteriorly. After

this ligature has been tied, one end is continued as a submucous mattress suture toward the bladder, the vaginal cuff being thus everted into the vagina. The suture is then tied. A second No. 2 chromic catgut suture includes the distal end of the uterosacral ligament near its ligature, the fascia of the cul de sac, the vaginal cuff (or the beginning of the first suture), the fascia of the cul de sac and the end of the other uterosacral ligament. This ligature is tied to fix the posterior point of the vagina. One end is carried forward as a mattress suture to bring together in the midline the fasciomuscular ends of the cervical ligament (a very definite structure when seen at operation). At the end of the closure it is tied. A figure of eight suture passed through the midline and through the ends of the round ligaments and tubes is then drawn tight and tied. This is an easy method of peritonealizing the raw surfaces. To complete the peritonealization, a suture begun in the cul de sac is passed through the fascia vesicae and tied in the cul de sac. The abdomen is closed by the layer method. **E. L. CORNELL, M.D.**

**ADNEXAL AND PERIUTERINE CONDITIONS**

**Douay, E. and Jépureano, P.** The Diagnosis of Tuberculous Salpingitis. Besredka's Reaction (Diagnose de la salpingite tuberculeuse. Réaction de Besredka) *Gynec et obst* 1930, **xx** 385

The three main anatomical types of adnexal tuberculosis are the peritoneal type, the superficial partial discrete type and the voluminous bilateral type. The least serious is the peritoneal type represented by the ascitic form occurring in young girls. This may be cured without operation. The superficial partial, discrete type should be treated by conservative surgery. The lesions of this type are nearly always bilateral. Even when granulations are visible under the peritoneum a tube supply to palpation may be preserved. When the tube is rigid and thickened and palpation reveals nuclei like rosary beads when the horns of the uterus present the hard swellings the size of cherry stones which are characteristic of interstitial nodular salpingitis, conservative operation is not advisable as it will be followed by recurrence. The lesions of nodular tuberculous salpingitis are intratubular lesions which in healing produce stenosis that usually results in sterility. Therefore in the treatment of such lesions castration is indicated. The slowness of the disturbances complained of after complete castration is remarkable and castration seems to favor cure of the tuberculosis.

Voluminous bilateral tuberculous adnexitis is of most interest to the surgeon. In suppurative tuberculous salpingitis all of the lesions must be removed. The only danger of the operation is the danger of opening the bladder or intestine. If possible the operation should be done before the tuberculosis reaches the neighboring organs.

Adnexal tuberculosis is found in 12 per cent of surgically treated cases of salpingitis.

Tuberculosis of the adnexa may suggest gonococcal salpingitis, puerperal salpingitis, or salpingitis due to the typhoid or colon bacillus or to a hæmatocele, extra uterine pregnancy, ovarian cyst, uterine fibroma, or ovarian tumor.

In any case of gynecological disturbance, especially any salpingo oophoritis, which is abnormal in its evolution and its symptoms the possibility of tuberculous salpingitis should be taken into consideration and the patient questioned with regard to a familial or personal history of tuberculosis. Important adnexal lesions may be found when there has been very little pain. Ordinary salpingitis usually yields gradually to rest in bed, the application of ice, and warm injections. In tuberculous salpingitis, a unilateral lesion may become bilateral in spite of careful medical treatment, the application of ice may be badly tolerated, and vaccinothérapie has no effect. Sometimes an unexplainable improvement takes place. The temperature curve is extraordinarily irregular. Improvement after colpotomy is of short duration. In ordinary salpingitis the menstrual periods are sometimes painful and are often followed by recrudescence of the adnexal infection manifested by postmenstrual pain with elevation of the temperature. However the periods remain regular. In tuberculous salpingitis, menstruation is irregular, diminished, or absent. In adnexal tuberculosis the patient rapidly loses weight and is pale and tired looking. Anæmia, asthenia, and anorexia are the rule. The toxins absorbed cause abundant perspiration with slight fever.

Salpingitis in the young girl with an intact hymen is very probably tuberculous. Tuberculosis is probable also in cases of salpingitis with clear signs of tuberculous peritonitis, ascites, and a periumbilical epiploic mass forming a hard shell covering the intestinal mass. The Besredka reaction is of great aid in the diagnosis.

According to Philippe, cases of adnexal tuberculosis constitute 93 per cent of all cases of genital tuberculosis in women. Salhard's estimate is 95 per cent. Adnexal tuberculosis can nearly always be cured by surgical excision. It is rarely associated with pulmonary tuberculosis.

The authors review twenty nine cases in which a clinical diagnosis of tuberculous salpingitis was made. Twenty three were operated upon. In five of the six cases which were not treated surgically, medical treatment resulted in a cure. Of the twenty three cases operated upon histological examination showed undeniable lesions of tuberculosis in fourteen. In ten of these fourteen the fixation reaction was positive and in four it was negative. The reaction may be absent in adnexal tuberculosis. In some cases the infection is of low virulence and slow progress and the prognosis is good. In others, the infection is severe and its progress is rapid. The reaction may become positive after operation when the organism struggles effectively against the bacilli. Under such circumstances the reaction is of prognostic value.

In confirmed pulmonary tuberculosis the average incidence of a positive fixation reaction is 85 per cent. Bestredt obtained a positive reaction also in 30 per cent of non tuberculous syphilitics. Therefore the authors examine the blood for syphilis when they employ the Bestredt test. In the twenty nine cases reviewed the Goldenberg technique was used. This is described in detail. The twenty nine cases are reported briefly, and the article is supplemented by a bibliography of thirty-four references.

PAGE

Roesse R., and Wallart J. Congenital Absence of the Ovaries and Its Basic Significance for the Theory of Determination of Sex (*Der angeborene Mangel der Eierstöcke und seine grundsätzliche Bedeutung fuer die Theorie der Geschlechtsbestimmung*). *Beitr z path Anat u z allg Path*, 1909, lxxiv, 421.

The occurrence of congenital absence of the ovaries is considered by the authors as proved by the case reported by Morgagni, the oldest known case and five cases reported more recently. Disappearance of the ovaries after fetal life seems to be excluded when there is no involvement of the neighboring tissues and no scar formation. Atrophy of the ovaries from torsion of the pedicle after fetal life would leave cicatricial stumps behind and involve all of the adnexa.

Spontaneous loss of the ovaries can scarcely be compared in its sequelæ to early castration because operative removal means a total loss. The subject whose case was reported by Meyers was not purely female, but the four subjects who were studied respectively by Olivet, Randerath, Schuermann, and the authors of this article were entirely female and merely underdeveloped. The latter therefore offer very definite proof of the difference between hermaphroditism and infantilism.

The authors' case was that of a thirty nine-year-old person of normal intelligence who died from a gliosarcoma of the cerebellum. Since the ninth year of age, growth had been symmetrically retarded and there had been difficulty in hearing. Menstruation had never occurred. The neck was short and thick, and the ears were without creases. Hair was absent from the axillæ and the pubes. The nymphæ were absent, and the vulvæ infantile. The hymen was intact.

The tubes were unusually long and very slender. The uterus was infantile and flaccid. The round ligaments were attenuated, and the pouch of Douglas was shallow. The thyroid was partly colloid and partly calcified. The parathyroids and the hypophysis were large. The thymus was present only in microscopic remnants. The marrow of the femur was composed entirely of fatty tissue. There was generalized emaciation and no secondary sexual fatty development. The breasts were underdeveloped.

There was a slight inclination of the pelvis. The pelvic measurements permitted no sex differentiation,

but as the symphysis pubis was nearly closed, growth had almost completed

Histological examination disclosed underdeveloped tissues, tubes of mixed infantile and adult structure and a uterus of an early infantile almost embryonal structure. The vagina was developed best, but was somewhat atrophied.

The enlarged hypophysis, as in similar cases, was rich in eosinophilic cells. From this as a whole, harmonious picture of infantilism emerged: the psyche and physiognomy of the adult. In the future the psychology in such cases should be studied by psychologists. The paucity of hair which was apparently not of hypophyseal origin gives rise to the question whether this is to be regarded as a sexual or even a heterosexual characteristic.

The ligamenta ovarii propria and infundibulo-pellica were present and the blood vessels were normal but in place of the ovaries there was only a whitish, thickened band on each genital ridge which represented merely the mesenchymal constituents of the ovary, in an early embryonic form. Germ cells were completely absent.

The right mesosalpinx, near the broad ligament, contained a tubule of the epoophoron at the stage of development of the primary secretory function of the mesonephric tubules in the first months of fetal life. The germinal lamina showed a finely papillary proliferation of the surface epithelium beneath which there was first a layer of longitudinally directed fibers next a layer of interlaced fibers resembling the cortical mesenchyma of young ovaries and still deeper a layer containing the great vessels. The middle layer contained only very fine vessels.

Some of the larger vessels had undergone total hyaline degeneration. On the dorsal side of the lamina there were numerous finer and coarser sympathetic nerve branches leading toward the upper side and exhibiting in places well developed coil formations. Beneath the germinal lamina there was a rete ovarii which was clearly delimited as in the fetus and lateral to this structure there were numerous afferent vessels and nerves from the plexus spermaticus. In the borders of the lamina and in the vasculosa there were paraganglionic cells which led to larger paraganglia farther back in the vasculosa. Here also were found the greater part of the rete and the more deeply situated tubules of the epoophoron which extended from the mesosalpinx into the broad ligament. Especially striking was a plexus of branching nerve fibers in a mass which resembled a neuroma and contained heaped up paraganglionic tissue.

Farther down toward the pelvis the mesonephros prevented the appearance of a cystadenoma with 'pseudoglomeruli' and some of the tubules were directly connected with the rete. Some of the tubules were entirely ensheathed by paraganglionic tissue, whereas others protruded, forming globular elevations of the serosa.

Between the tubules there was a small nodule of suprarenal cortical tissue with centrally located,

darkly nucleated small cells which the authors consider primitive forms of sympathogonia. Externally, in the investing membrane of the nodule were paraganglionic cells, some of which were arranged in rows. In its more lateral portions the mesonephros resembled more nearly a rudimentary epididymis.

On the left side the adnexa exhibited less differentiation and lacked the tumor-like characteristics which were noted on the right side. In the broad ligament were remnants of mesonephros such as are found in the earliest periods of embryonic life, with glomeruli, secretory tubules and collecting tubules.

From the canaliculi there extended solid sprouts which gradually became canalized and led to the rete. This observation has led to the conclusion that the rete arises from the mesonephros (Wallart). No trace of Gartner's canal could be found.

In the discussion of this case the authors state that even without the development of sex glands the zygotically determined sex impress is sufficient for sexual development in one direction or another.

The authors consider whether the case reported by Meyer was due to a loss of the sex glands at a different teratogenetic period or to the influence of some primitive impulse toward intersexuality. They discuss also whether the epididymis-like organ in their case indicated a first stage of masculinity.

Recent articles on intersexuality have caused them to become doubtful regarding the original sexuality in their case.

The presence of a large hypophysis with eosinocytosis was important. The growth of the genitalia proceeds according to age even in the absence of the ovaries. Perhaps the hormone of the anterior lobe of the hypophysis has some relation to exuberant development of the paraganglia and the mesonephros. It is noteworthy that the rete is very markedly developed in cases of myoma and pregnancy (Wallart).

ROBERT MEYER (G)

**Manzi** The Various Effects Produced on the Ovary by Graded Doses of Follicular Fluid, Extract of Corpus Luteum and Extract of the Whole Gland (L'ovaria e la diversa influenza che su di essa esercita il liquido follicolare, l'estratto di corpo luteo e della glandola stessa in toto, a dosi varie) *Arch. di ostet. e ginec.* 1930 xxxvii, 253.

In treating young guinea pigs with graded doses of follicular fluid the author found that small doses produced a transient secretory hyperfunction of the stratum granulosum and the epithelial covering of the ovary. Medium doses produced a swelling of the follicles from increased secretion without apparent hyperplasia of the stratum granulosum but with hyperplasia of the entire ovary which seemed to increase in size and large doses caused sclerosis of the organ after a period of hypersecretion and congestion.

Small and medium doses of extract of corpus luteum were followed by hyperplasia while large doses given over a longer period of time were followed by renewed activity in the follicular elements.

with hyperplastic proliferation originating from the theca, invading the follicle, and leading to atresia without any noteworthy reaction in the ovarian stroma

The administration of extract of the whole gland had no appreciable effect on the ovary

ANTHONY R. CAMERO, M D

### MISCELLANEOUS

Petit-Dutaillis, P Clinical and Roentgenological Studies of Disorders of Motor Function in Gynecology (*Etude clinique et radiologique des troubles moteurs en gynécologie*) *Gynécologie*, 1930, **xviii**, 193

Disorders in the motor function of the female genital tract are classified by the author as (1) those due to hyperkinesia and hypertonicity and (2) those due to hypokinesia and hypotonicity

Hyperactivity and hypertonicity of the genital musculature may be explained as a manifestation of a spasmophilic diathesis or a reflex initiated by a genital or extra genital disorder (bacterial or parasitic infections, etc.) The spasmodic contractions of the muscles of the vulva, vagina, uterus, tubes and uterine ligaments give rise to many disorders chief among which are dysmenorrhœa and sterility. Proper treatment requires, of course, a knowledge of the causal factors and this can be obtained only by a careful analysis of the case from the standpoint of reflex causes and constitutional factors. Visualization of the genital tract by means of lipiodol injec-

tions under fluoroscopic control serves to demonstrate organic as well as functional disorders

Dysmenorrhœa and sterility due to stenosis of the cervix are best treated by the insertion of a stem pessary or an operation which widens the cervical canal and the external os. In some cases, however, dilatation alone has proved helpful. Endocrine disorders which frequently cause disturbances in the vegetative nervous system must be treated with appropriate gland products. In some cases, physiotherapeutic measures, antispasmodic drugs, psychotherapy, and even surgical procedures (resection of the prelumbar sympathetic plexus, etc.) may be indicated

Hypokinesia and hypotonicity have also been demonstrated to be the cause of a large group of disorders (retroversion, procidentia, visceroptosis, etc.) The therapeutic measures recommended include endocrine therapy (suprarenal extract), sympathicotonic drugs, physiotherapy, psychotherapy and certain surgical procedures (suspension colporrhaphy, etc.) An important factor in the management of these cases is the control of constipation

The author describes in detail the technique employed in the insertion of stem pessaries, the operation for widening the cervical canal, and his instrument and technique for lipiodol injections. A series of excellent reproductions of X-ray plates showing the various types of motor disturbances of the uterus and tubes concludes the article

HAROLD C. MACF, M D

# OBSTETRICS

## LABOR AND ITS COMPLICATIONS

Reed G B. Avertin Anaesthesia in Obstetrics  
*Am J Surg* 1930 ix, 76

Avertin tribromethylalcohol in 3 per cent solution is used for the induction of rectal anaesthesia in the late stage of labor. It is dissolved in water at a temperature of 104 degrees F. Above this temperature it may decompose forming toxic substances irritating to the bowel. A fresh solution must be used for each labor.

The drug is rapidly absorbed by the bowel. Its effect begins in about fifteen minutes and lasts for two hours. The dosage for analgesia ranges from 0.1 to 0.15 gm per kilogram of body weight. The author uses from 0.03 to 0.06 gm per kilogram of body weight thereby obtaining narcosis instead of analgesia.

Reed has employed avertin in ten labors. He reports the results as excellent. Following delivery nine of his patients stated that they had no recollection of pain. There was no excitement preceding the narcosis and no headache and no vomiting after it. The pulse, blood pressure and respiration remained practically unchanged.

CHARLES F DuBOIS M D

Connell J S M. The Use of Avertin in Childbirth  
*Lancet* 1930 ccix 184

Connell reports on the use of avertin in fifty obstetrical cases. Avertin gives the woman a chance to rest during the labor but its analgesic effect is not sufficient by itself to permit operative delivery. No unfavorable results from its use have been noted. It has no effect on the mother besides the analgesia; it does not increase asphyxia in the infant and it does not noticeably prolong labor.

The best indication for its use is the case of the primipara in which labor progresses normally but the pains become very severe at the end of the first stage and the beginning of the second stage. In such cases avertin induces a deep sleep between the contractions and lessens sensibility to the pains. During the actual parturition a small amount of an inhalation anaesthetic is generally employed. In the cases of multiparae avertin is administered earlier because the second stage of labor is shorter.

Avertin is administered by rectum. The dose is 0.075 c cm per kilogram of body weight. The drug is added to 160 c cm of distilled water and used at body temperature. Its administration should consume from ten to fifteen minutes. The patient is usually asleep in from five to ten minutes after the beginning of the instillation and the ensuing narcosis lasts for from one to one and a half hours.

ARTHUR H. KAWANS, M D

Mahon R. The Effect of Spinal Anaesthesia on Uterine Contractions (L'action de la rachianesthésie sur la contractilité utérine) *Gynéc et obst* 1930 xxi 236

A review of the literature dealing with the effect of spinal anaesthesia on uterine contractions reveals in the main two opposing theories: (1) that the uterine contractions are maintained or increased and (2) that the uterine contractions are diminished or abolished.

To determine which of these theories is correct Mahon undertook a series of experimental and clinical investigations. The results appear to substantiate the second theory.

Lymographic tracings showing the behavior of the uterine musculature of women in whom spinal anaesthesia was induced during labor showed a marked diminution and in many instances total absence of rhythmic contractions. The progress of labor was retarded. In no instance could the author observe an eccholic or oxytocic effect when the anaesthetic was administered prior to or during labor. Complete inertia of the uterine musculature was demonstrated also by failure of the uterus to respond to the injection of pituitary extract except in one instance of epidural anaesthesia obtained by injecting 0.05 gm of syncaine which resulted in incomplete anaesthesia limited to the perineum. The injection of 1 c cm of pituitrin in this case was followed by spontaneous delivery. In all other cases pituitrin had no effect and delivery could be accomplished only by instrumental means after manual dilatation of the cervix as proposed by Delmas. Manual dilatation of the cervix was easily accomplished because of atony of the cervix and lower uterine segment.

The author comes to the conclusion that while small doses of anaesthetic administered intraspinally may have no influence on uterine contractions, the doses usually administered to produce complete anaesthesia invariably diminish or suppress the contractions.

The apparent contradiction of these findings to clinical observations made in the course of caesarean section (during which the uterus almost invariably remains firm and hemorrhage is much less pronounced than during the course of general anaesthesia) is attributed by the author to retraction rather than contraction of the musculature. The same effect was observed in rabbits after section or destruction of the lumbar segment as well as after the induction of lumbar anaesthesia. In every instance there was a permanent tonic retraction of the musculature without an ensuing relaxation. This observation explains the apparent contractility of the uterus. The latter, however, is not sufficient to permit labor to progress.

HAROLD C. MACK, M D

Devralgne, J., Banzet, P., and Mayer, M. **Four Cases of Fistula from the Uterus to the Abdominal Wall Following Cesarean Section Which Were Treated Surgically and Studied Histologically** (Quatre cas de fistules utérinaires consécutives à des opérations césariennes traitées chirurgicalement, avec étude histologique) *Bull Soc d'obst et de gynéc de Par*, 1930, xiv, 403

In four cases in which a fistula from the uterus to the abdominal wall developed after cesarean section, histological study of the removed fistulous tracts showed the various stages in the evolution of the fistula. Well defined glandular elements derived from the endometrium were not always present, and the tract did not extend to the surface of the abdomen or show a well defined lumen in every instance. The authors therefore classify the fistulae as complete, incomplete, or regressive according to their structure.

The presence of active inflammation is considered a definite contra indication to surgical treatment. Good results are obtained from operation only after the acute stage has passed. As in one of the fistulous tracts examined five loops of silk ligature were found, it is possible that such ligatures may be a causative factor in the formation of the fistulae.

The chief indication for surgical treatment is the prevention of obstetrical complications such as dystocia and uterine rupture. For cases of fistula associated with pregnancy, the authors advise removal of the tract at term during the course of cesarean section. In complicated cases they deliver the fetus through an incision in the posterior surface of the uterus.

In conclusion, the authors emphasize the importance of careful peritonization of uterine wounds to prevent the occurrence of postoperative fistula and to prevent the recurrence of such a fistula after its removal.

HAROLD C. MACK, M.D.

#### PURPERIUM AND ITS COMPLICATIONS

Hypber, N. **The Treatment of Acute Puerperal Inversion** *Brit M J*, 1930, ii, 179

The author reports a case of sudden complete inversion of the uterus occurring seven days after delivery. The uterus was replaced under anaesthesia and the vaginal vault packed with gauze to prevent recurrence and control hæmorrhage. The patient made a fairly uneventful recovery.

In cases of profound shock, the treatment should be directed toward control of the shock before the attempt is made to replace the uterus. Reduction should always be done under anaesthesia, otherwise the shock may be greatly increased.

T. FLOYD BELL, M.D.

Taylor, J., and Wright, H. D. **The Nature and Sources of Infection in Puerperal Sepsis** *J Obst & Gynec Brit Emp*, 1930, xxxvii, 213

The authors discuss the findings of examination of the vaginal flora in 1,100 women immediately prior

to delivery and, in 250 cases, a comparison of the findings just before delivery with those made on the third day of the puerperium.

They state that although potentially dangerous micro organisms are present in the genital tract before delivery, it is very rarely possible to prove that they have caused actual infection. In the investigations reviewed, non-hæmolytic streptococci and the staphylococcus albus were discovered very often prior to delivery.

With regard to hæmolytic streptococci it was found that severe sepsis is frequently due to this micro organism, but may be produced also by other bacteria, and that while the hæmolytic streptococcus may cause mild infections, the majority of mild infections are due to other bacteria.

In none of the cases studied was there undoubted evidence of the production of sepsis by hæmolytic streptococci present before delivery. The failure of infection to develop could not be attributed solely to disappearance of the micro organisms during delivery for while they could not be found in 7 of 27 cases in which they were sought during the puerperium (in 7 in the vagina alone and in 20 in both the vagina and the uterus), a biologically similar micro organism was discovered in both the uterus and the vagina in 6 and in the vagina alone in 14. Accordingly it appears that the hæmolytic streptococci may enter the uterus without producing infection and may be present also in the lochia and uterine contents of uninfected puerperal women. It is evident also that hæmolytic streptococci present in the vagina before delivery usually do not cause infection.

After delivery, anaerobic streptococci were found in both the vagina and the uterus in the absence of signs of infection in 4.2 per cent of the cases.

Hæmolytic streptococci are relatively infrequent both before and after delivery.

One of the chief changes occurring in the genital flora following delivery is an increase in the number of colon bacilli.

The results of the investigation reviewed suggest that the bacteria of most importance in puerperal sepsis are those which enter the genital tract during and after labor, but that there is danger also, though it is slight, from micro organisms present before labor.

CHARLES F. DUBOIS, M.D.

Colebrook, L. **Infection by Anaerobic Streptococci in Puerperal Fever** *Brit M J*, 1930, ii, 134

Colebrook investigated cases of puerperal sepsis which had been previously designated as "fevers of unknown origin." Of a series of seventy six such cases, eighteen were found to be due to an anaerobe or anaerobes or a combination of anaerobes and other organisms. In all cases cervical and uterine cultures were found to be of little value because of the heterogeneous character of the organisms cultured.

Nineteen related strains of anaerobic streptococci were isolated from the bloods. Most of them were

round streptococci in short chains. All were gram positive. Only two were resistant to oxygen. Ten produced a definitely fecid gas.

The author describes his method of preparing the culture media and making the cultures.

In conclusion he states that with improvement of the technique employed in the culturing of an aerobic organisms the cause of puerperal sepsis will be discovered more frequently.

ARTHUR H. KLEWANS, M.D.

# NEWBORN

Chase, W. H. An Anatomical Study of Subdural Hemorrhage Associated with Tentorial Splitting in the Newborn. *Surg. Gynec. & Obst.* 1930, 51: 31.

From thirty-two cases of subdural hemorrhage with tentorial splitting the author draws the following conclusions:

1 Subdural hemorrhage is the important intracranial lesion in most cases of birth trauma.

2 There is nothing to indicate that intradural hemorrhage or tentorial splits *per se* are of note worthy clinical significance.

3 The subdural hemorrhage is largely supratentorial and often bilateral. It is usually due to stretching and rupturing of the small tributaries of the great cerebral vein near its junction with the straight sinus.

4 Tentorial splits are relatively more numerous in the premature infant than in the full term infant, partly because of the greater immaturity of the fibers of the dural septa in the premature infant.

5 The causes of prolonged and difficult labor may be equally as important in these intracranial lesions as the operative interference.

6 Signs of asphyxiation are constant but definite signs of intracranial irritation are noted in only a small minority of cases. CARL H. DAVIS, M.D.

# GENITO-URINARY SURGERY

## ADRENAL, KIDNEY, AND URETER

Susman, W. Atrophy of the Adrenals Associated with Addison's Disease *J Path & Bacteriol*, 1930, xxxiii, 749

In 1426 autopsies performed at the Manchester Royal Infirmary, 6 cases of Addison's disease were found. Of these, 5 were due to atrophy and 1 to tuberculosis of the adrenals. In the same period of time 14 cases of Addison's disease were treated.

This report deals with the clinical and autopsy findings in 5 cases of Addison's disease in which atrophy of the adrenals was found. The adrenal picture was one of extreme atrophy of the cortical and usually also of the medullary tissue which reduced the gland to such trifling dimensions that microscopic examination was necessary for the recognition of adrenal tissue. The atrophic change was characterized by loss of cortical cells, overgrowth of the fibrous capsule, and lymphocytic infiltration, but in no instance was there evidence of an active disease such as tuberculosis or syphilis. Of a collected series of 124 cases of Addison's disease, 23 (18.5 per cent) showed atrophy of the adrenals.

The cause of adrenal atrophy is obscure. The absence in the atrophied glands of a destructive pathological process of a definite nature seems to exclude tuberculosis and syphilis as responsible factors. There is experimental evidence that acute toxic action will cause necrosis of this tissue and that more prolonged action will cause depletion of lipoids. In cases of adrenal atrophy the loss of cortical substance is characteristic and seems to bear a definite relationship to the symptoms of Addison's disease.

VERNE G. BURDEN, M.D.

Hellier, F. F. The Incidence of Atrophy and Tuberculosis of the Adrenal Glands and Their Relation to Addison's Disease *J Path & Bacteriol*, 1930, xxxiii, 761

In 1200 autopsies performed at the Leeds General Infirmary in the period from 1910 to 1930, 9 cases of Addison's disease were found. Six of these showed tuberculosis and 3 showed atrophy of the adrenals. The total number of cases of tuberculosis of the adrenals was 24. The condition occurred on the right side in 3 and on the left side in 5 and was bilateral in 16. In 14 cases the lesion was fibrocaseous, in 9 nodular, and in 1, calcified. There were 12 definite cases of atrophy of the adrenals and 4 doubtful cases. In 3 of the bilateral cases of atrophy, Addison's disease was present. Of the 16 cases of bilateral tuberculosis of the adrenals, Addison's disease developed in only 6, whereas of the 4 cases of bilateral atrophy of the adrenals, Addison's disease developed in 3. VERNE G. BURDEN, M.D.

Anderson, H. B. A Tumor of the Adrenal Gland with Fatal Hypoglycæmia *Am J M Sc*, 1930, clxx, 71

Anderson reports a case of hypoglycæmia in which the outstanding pathological findings were a tumor of the left adrenal gland and congestion of the pancreas and the pituitary gland. One pathologist described the adrenal tumor as looking more like a liver cell tumor than an adrenal tumor, but as it was an adrenal tumor he thought it was of medullary origin. Two pathologists described it as a carcinoma of the adrenal cortex. The author does not attempt to explain the relation between the hypoglycæmia and adrenal tumor but believes that if all such cases are carefully studied and recorded, a satisfactory explanation will be discovered in time.

SAMUEL PERLOW, M.D.

Kidd, F. Intravenous Pyelography *Lancet*, 1930, ccxix, 125

The medical profession has been searching for a non-toxic iodine containing substance which will be removed from the blood stream in a concentration sufficient for pyelography, ureterography and cystography. These requirements are met by uroselectan which is soluble in water and has an iodine content of 12 per cent. In the case of a man weighing 180 kgm. 180 gm. of the drug can be injected intravenously without danger. Shortly after the injection, 95 per cent of the drug can be recovered unchanged from the urine and fifteen minutes after the injection no iodine can be found in the blood. Uroselectan passes through the renal tubules and out of the body without giving off any iodized iodine, therefore it does not cause iodism.

Swick uses 40 gm. of uroselectan dissolved in 100 c.c. of distilled water. In 110 cases in which it was employed there was only 1 death, that of a patient with nephrosis who died of uræmia nineteen hours after the injection. Roentgenograms are taken fifteen, forty-five and seventy-five minutes after the injection and later, if necessary, the patient micturates after each exposure.

When uroselectan is given by mouth it causes vomiting. During its intravenous injection, the patient may experience a slight buzzing in the head, a feeling of warmth, and giddiness.

The drug does not injure the tissues or the kidneys but its use is contra-indicated when both kidneys are severely damaged.

BENJAMIN F. ROLLER, M.D.

Herridge, K. Intravenous Pyelography as a Test of Renal Function *Lancet*, 1930, ccxix, 132

Intravenous pyelography not only reveals morphological changes but gives a clue to functional capacity.



In all cases in which pelvic shadows have been absent in the roentgenogram the kidney was found at operation or autopsy to be so disorganized as to be functionless.

The author notes the time of appearance of the drug in pyelograms made one quarter and one half hour after its injection. If the shadow appears demonstrating that renal function is satisfactory, but the calyces fail to show, he applies compression to the ureters at the level of the sacro iliac joints. In the cases of obese patients cystoscopic pyelography is necessary.

Intravenous pyelography is a complement to pyelography, but its results must be checked by the older urological methods.

BENJAMIN F. ROLLER M.D.

**Lichtenberg A. von. Kidney and Ureteral Lesions Secondary to Adnexal Disease. J Urol 1930 XLIV 1**

The author emphasizes that before instrumentation of the urinary tract is attempted an examination of the prostate and seminal vesicles should be made as there is a definite relationship between adnexal disease and the three main groups of urinary conditions—urinary infections, calculus formation and urinary obstruction.

Adnexal disease is almost invariably associated with persistent and usually bilateral pain in the region of the kidney, turbidity of the urine and dysuria.

As a rule both seminal vesicles and the prostate are diseased. The expressed secretion shows pus and usually cocci. In most cases the bladder changes are limited to inflammation of the trigone. Roentgenograms may show all forms of partial or general inflammatory changes in the upper urinary tract—localized or general atony of the ureter, perureteritis, loops and kinks, strictures, dilatation of the kidney pelvis, peripelvis with pressure on the kidney, and even renal carbuncle and chronic abscess of the kidney.

Pyelography yields definite evidence of pathological changes and is superior to the older methods of studying urinary changes and renal function.

The treatment of secondary kidney changes depends upon the cause. The diseased adnexa should be treated first even when the secondary changes higher in the urinary tract are advanced. Relief of the symptoms is not enough; the treatment must be continued until all objective pathological signs have disappeared. Conservative treatment should be tried before surgical procedures unless disease of the bladder sphincter is the cause of residual urine. Operation should be resorted to only when conservative treatment fails.

Conservative methods include diathermy, injections of ichthyol, intravenous injections of sodium iodide, acriflavine, mercurochrome, salvarsan and urotropin sitz baths and the long continued use of caprolol with diathermy. Surgical measures include perineal prostatectomy, sacral extirpation of

the seminal vesicles or of all of the adnexa and Belfield's operation. Strictures, kinks and periureteral lesions must be treated surgically. The author operates also in cases of purulent pyelonephritis, kidney abscess, carbuncle of the kidney and chronic perinephritis. In cases in which the kidney has sustained irreparable damage he has performed nephrectomy. In certain cases of perinephritis, diathermy and the use of mud packs have a good effect.

MATRICE J. MELLER M.D.

**Vombaerts J. and Laroche A. The Frequent Association of Tuberculosis of the Epididymis and Tuberculosis of the Kidney (De la fréquente association de la tuberculose épididymaire et de la tuberculose rénale). J Urol mtd et chir 1930 XLIV 439**

The genital organ most frequently attacked by tuberculosis is the epididymis. Tuberculosis of the epididymis is relatively benign, but is of importance because it may extend to vital organs and because it is frequently associated with tuberculosis elsewhere, especially in the kidneys.

The authors report a study of 375 cases of tuberculosis of the epididymis. One hundred and forty-five of the patients complained only of tumefaction of the scrotum. There were no urinary symptoms. The urine was clear and inoculation experiments showed it to be harmless to guinea pigs. Epididymectomy or castration was done more or less early in every instance, but tuberculosis of the urinary tract developed later in 28 cases and necessitated nephrectomy in 24.

In all cases of tuberculosis of the epididymis with out apparent involvement of the urinary tract, the possibility of a symptomless renal tuberculosis should be borne in mind and the patient watched for a long time.

In a second group of cases in which the physician is consulted only because of swelling of the scrotum, the urine is turbid and the history discloses the presence of slight urinary disturbances which have not been severe enough to cause the patient anxiety. Of the cases studied by the authors 46 were of this type. In 30 latent renal tuberculosis was diagnosed by histological and bacteriological examination of the urine. Nephrectomy was done at the same time as epididymectomy in all except 1 case, in which the renal lesions were bilateral. One patient in whom no renal lesion could be detected at that time developed tuberculosis of the kidney a year later.

In a third group of cases urinary symptoms and turbidity of the urine are present, but the patient is unaware of a genital lesion. One hundred and eighty-four of the cases studied by the authors were of this type. In 57 genital lesions could be diagnosed at the first examination. In 27 epididymectomy was done at the time of the nephrectomy and in 5 it was done later. In 127 cases no genital lesion was found at the time of the first examination, but in 15 of these a genital lesion developed later and in 9 of the latter it was treated by epididymectomy.

According to the statistics reviewed, tuberculosis of the epididymis is present in at least 44 per cent of cases of renal tuberculosis, and 36 per cent of patients with evident tuberculous epididymis have an unrecognized renal tuberculosis.

Epididymectomy can be carried out bilaterally without altering the internal secretion. It is a simple operation when a good technique is used, and is nearly always possible. Castration should be done only when there is advanced destruction of the testicle. The authors have seen no case of generalization of the tuberculosis after epididymectomy. The mortality of renal tuberculosis is increased when the condition is associated with tuberculosis of the epididymis. In the surgically treated cases of combined renal and genital tuberculosis which are reviewed by the authors the mortality was 14 per cent.

FLORENCE A. CARPENTER

Herbst, R. H. and Polkey, H. J. Renal Resection, An Experimental Study of Postoperative Function. *Surg., Gynec. & Obst.*, 1930, li, 213.

The authors report experiments carried out on thirty-seven dogs to determine the extent to which the excretion of phenolsulphonphthalein is affected by partial renal resection and the best method whereby hæmorrhage, fistula, and atrophy may be avoided.

After delivery of the kidney, the upper pole was decapsulated and then excised by a wedge shaped incision. If the renal pelvis was opened, it was closed with catgut sutures when convenient, if closure was not convenient, it was not done as it was not considered necessary. In none of the animals in which the urinary tract was normal did a fistula develop. The capsule was drawn together over the resected end and the renal wound closed by simple through and through sutures of No. 1 catgut fused in the end of a straight intestinal needle and vaselined. The abdominal wound was closed in the usual way without drainage, and the skin was sutured.

After periods ranging from one to thirty-four weeks the animals were anesthetized with barbital sodium given intravenously. This anæsthetic did not interfere with the free secretion of urine. A suprapubic cystostomy was then performed and the ureters were catheterized. Water was given by a stomach tube and saline solution was given subcutaneously. Six milligrams of phenolsulphonphthalein were then injected intravenously and the urine collected for one hour. At the end of that time the dogs were killed with ether, the kidneys were removed, weighed, and measured, and the phenol sulphonphthalein estimation was made.

The kidney which was not operated upon remained normal in function and weight in all but two of the dogs, but the resected left kidney showed a decrease of weight and of phthalein output in all experiments and at all times. Because of congestion and repair processes, the decrease in function was most marked during the first two weeks after the

resection. Gradual restoration of function occurred in the third to fifth week, but there was never complete restoration to normal. The weight of the resected kidney also increased during the first two weeks as the result of congestion and repair processes. After the third week the kidney slowly decreased in size and weight until it was smaller than normal. In no instance, however, was there total atrophy or complete loss of function. The reduction in function was relatively greater than the reduction in weight, this fact probably being explained by trauma to the renal secreting tissue.

The authors conclude that resection has an effect upon renal function, but does not affect life or health or cause compensatory hypertrophy of either kidney. Leakage due to renal resection is very rare. It did not occur in any of the thirty-seven dogs operated upon. Hæmorrhage is an infrequent complication. The occurrence of hæmorrhage in one of the authors' dogs was found at necropsy to be due to faulty hæmostasis resulting from poor technique.

J. SYDNEY RITTER, M.D.

## BLADDER, URETHRA, AND PENIS

Olcott, C. T. Urethral Caruncle in the Female. *Surg., Gynec. & Obst.*, 1930, li, 61.

Urethral caruncle in the female was first described in 1750 by Sharp. The cause is uncertain or varied. The average age at which the lesion appears is at about the menopause.

In routine pathological diagnosis the infolding of the epithelium may suggest carcinoma. Of the twenty-three cases reported, stratified squamous epithelium was predominant in about one half and the transitional type in the others. Notable epithelial infolding was found in six cases. In seventeen cases definite compound acinar glands resembling the glands of Skene were present in the submucosa. It is probable that these glands are important factors in the formation of caruncles as both occur in the posterior quadrants of the urethra. In most of the cases reviewed chronic inflammation was present. There was no microscopic evidence of malignancy. The benign character of urethral caruncle is apparent also from the clinical observations and the extreme rarity of epithelioma of the female urethra. However, the author knows of two cases in which an extensive operation was performed because of an erroneous diagnosis of epithelioma.

J. EDWIN KIRKPATRICK, M.D.

Ferry, G. The Therapeutic Indications in Cancer of the Penis. Report of a Case Cured After Four and a Half Years. (Les indications thérapeutiques actuelles du cancer de la verge. A propos d'un cas guéri depuis quatre ans et demi.) *Bull. et mém. Soc. nat. de chir.*, 1930, lvi, 618.

The case reported by the author was that of a man seventy-eight years of age. At the end of the penis there was an irregular ulcerated tumor the size of a mandarin orange, and in the right and left inguinal

regions there was painful adenopathy. A mould covering two thirds of the penis and containing eleven tubes of radium was applied for seventy two hours. The patient left the clinic on the fifth day. Examination four and a half years later revealed a good scar, absence of glandular enlargement, and no tendency toward recurrence.

Moore and Ferry's report to the Society, stated that in France the incidence of cancer of the penis is only 2 per cent, but in the Orient it is higher. In Tonkin Indochina it is 17.5 per cent. Syphilis is an important factor in the causation of the condition.

In structure and evolution the lesion resembles epithelioma of the skin. It develops slowly and recurs frequently, but seldom forms metastases.

The treatment is surgical ablation of the tumor, amputation of the penis or radium therapy. Radium therapy has the advantage of preventing mutilation and often gives excellent results, but the mobility of the penis makes the application of radium difficult and the irradiation may cause induration of the prepuce and corpora cavernosa and sclerosis and atresia of the urethra. Ablation of the glands is necessary only in cases in which adenopathy persists after treatment of the tumor. In doubtful cases it should be done only if indicated by biopsy.

GFPAR described a technique which prevents atresia of the meatus, facilitates attachment of the moulded apparatus containing radium, and permits the patient to urinate without removing the apparatus. In a case in which an epithelioma of the gland had invaded the meatus he incised the ventral surface of the penis beginning 1 cm. from the frenum, dissected the urethra and its spongy body, sectioned the urethra transversely at a distance of 1 cm. from the frenum, disengaged it from the penis toward the bladder, separated the corpora cavernosa for a distance of 1 cm. and then turned the urethra back closing the skin above it so that it resembled a small tube attached to the ventral surface of the penis. No suture was used to re-unite the skin and mucous membrane.

THIRY reported a case of very extensive cancer of the penis in a man of eighty three years which was treated by amputation near the pubes. The patient died two years later, but did not develop a recurrence. Thiry reported also a case of cancer of the penis in a man aged seventy five years who was operated upon four years ago and is still free from recurrence. He stated that because of the age of his patients he has thought it unnecessary to operate upon the glands however enlarged they may be. He has never seen a glandular recurrence.

LEORMANT stated that he has not found the results obtained by surgery very favorable. Of ten patients upon whom he operated three died in less than six months after the operation. Four of the patients were treated by amputation of the penis without removal of the glands and six by amputation with curettage. The inguinal wounds usually suppurated and took a long time to cicatrize. Leormant believes that ablation of the glands should be

done only when it is absolutely necessary, as often the adenopathy is only inflammatory and retrogresses after amputation of the penis. He has found that recurrence in the glands is rare.

FLORENCE A. CARPENTER.

## GENITAL ORGANS

Thomson Walker, Sir J. Enlarged Prostate and Prostatectomy. Lecture II. *Lancet* 1930, cxxviii, 1219.

At the present time permanent bladder drainage is used only in cases of prostatic enlargement that are unsuitable for operation. In determining the advisability of prostatectomy it is necessary to consider the prostate, the urinary organs, and the patient's general condition.

The author discusses two types of enlarged prostate—the fibrous prostate and the malignant prostate. He states that the term 'fibrous prostate' is applicable to any prostate of small size which causes symptoms of chronic obstruction and irritation and resists digital enucleation. It includes a number of different pathological conditions such as early adenomatous enlargement, chronic prostatitis fibrosis of the stroma, scattered prostatic calculi with fibrosis and a form of early malignant growth which develops around the internal meatus.

The condition of the fibrous prostate cannot be diagnosed with certainty before operation. Enucleation of the gland may be impossible, but the prostate can be thoroughly removed by transvesical dissection under control of vision.

Malignancy of the prostate is of two distinct clinical types. In one, the change in the gland is cancerous from the outset. In the other, the gland has at first the character of the ordinary enlarged prostate and the malignant changes occur later. The malignant growth may develop in any one of three localities—the base of the prostate in the neighborhood of the internal meatus, the periphery of the enlarged gland, or the substance of the enlarged prostate. The urinary complications caused by enlargement of the prostate—renal insufficiency and sepsis—are to a large extent amenable to treatment before operation.

There is no risk of uremia following prostatectomy if the urea concentration is 2 per cent or over, but there is slight risk when the reading is from 1.8 to 2 per cent and very serious risk when the reading is below 1.8 per cent. However, if extreme care is taken it may be possible to operate successfully even when the urea concentration is 1.5 per cent. A patient with such a urea concentration may recover if no complications such as bronchitis, hemorrhage, or sepsis develop, but stands very little chance of surviving a complicated postoperative course.

Successful prostatectomy does not require perfect or even approximately perfect renal function. The results of renal function tests constitute only one factor among many to be considered in the estimation of the prognosis of operation. The patient's

general build and constitution the condition of other organs, the experience and skill of the operator, and the surroundings in which recovery from the operation will take place are of great importance in the outcome

Sepsis jeopardizes the results of the operation, but when the infection is recent and moderate and there is no evidence of renal involvement, the prostatectomy may be undertaken after a few weeks of preparation by thorough bladder washing and the removal of residual urine by intermittent catheterization or an indwelling catheter, together with diuresis and the use of urinary antiseptics. When a more severe grade of sepsis is present it may be necessary to perform a suprapubic cystotomy and drain the bladder. When pyelitis and pyelonephritis are present the pre operative preparation is determined by the general condition, the condition of the urine, the results of renal function tests, and the cholesterol content of the blood.

The author discusses also the relation of cardiovascular disturbances, mental and nervous diseases, disease of the spinal cord, and glycosuria to disease of the prostate. He emphasizes that on account of the danger of sepsis and of malignant change in simple enlargement of the prostate, operation on the enlarged prostate should not be long delayed.

Preliminary drainage of the bladder by catheter or cystotomy is considered in relation to chronic retention with symptoms of renal insufficiency, prostatic enlargement with serious urinary sepsis, prostatic enlargement with chronic retention and a serious complication such as severe bronchitis or pneumonia, and prostatic enlargement without chronic retention of urine and without serious urinary sepsis.

In chronic retention with symptoms of renal insufficiency the advantages of the use of an indwelling catheter are that the fluid in the distended bladder can be withdrawn very slowly in measured quantities, the suprapubic area, the site of the future prostatectomy incision, is untouched, asepsis is more easily maintained, the method spares the debilitated and uræmic patient, and only one cutting operation is performed.

In cases of enlarged prostate with serious urinary sepsis the retained catheter is worthless as the lumen is much too small to allow the free discharge of purulent urine. The only effective procedure is suprapubic cystotomy with the introduction of a large open tube.

In cases of prostatic enlargement with chronic retention and a serious complication such as severe bronchitis or pneumonia, suprapubic drainage is preferable to catheter drainage as the latter is difficult.

In cases of prostatic enlargement without chronic retention of urine or serious urinary sepsis a single-stage prostatectomy is best as the second stage of a two stage intervention is much more likely to produce shock than the single stage operation.

C TRAVERS STEVIE, M D

Thomson-Walker, Sir J. Enlarged Prostate and Prostatectomy. Lecture III. *Lancet*, 1930, CCXIII, 1273.

The author deals only with suprapubic prostatectomy. After a brief discussion of the so called closed method of Freyer and the open operation of Judd, he describes his own open method in detail. In emphasizing the importance of postoperative treatment he discusses the prevention and treatment of shock, the recognition of early hæmorrhage, and the methods of treating postoperative hæmorrhage.

In 269 cases in which suprapubic prostatectomy was done for simple enlargement of the prostate in St. Peter's Hospital, London, in the period from 1901 to 1929, over 70 per cent of the deaths were due to shock, cardiac failure, renal failure, or sepsis.

The average mortality of suprapubic prostatectomy for simple enlargement of the prostate in 11 general hospitals over a ten year period was 19.5 per cent. The mortality of the 1 stage operation was 3.1 per cent higher than that of the 2 stage operation. However there were almost twice as many 1 stage operations as 2 stage operations. In the author's series of 472 suprapubic prostatectomies performed in private practice during an eleven year period the mortality was 5.2 per cent.

The chief causes of failure of prostatectomy are sepsis and postoperative obstruction. Obstruction may be caused by fibrous contraction at the site of the operation or a new growth in the wall of the prostatic bed. Stricture after suprapubic prostatectomy is most apt to occur at the membranous urethra and at the outlet of the bladder. In the larger proportion of cases the fibrous contraction is at the vesicoprostatic outlet.

An essential part of the open method is the establishment of a free opening from the bladder into the prostatic cavity. If necessary, a wedge of tissue is removed from the posterior segment of the ring of the vesicoprostatic outlet. At the completion of the operation there is no hour glass formation due to narrowing at the junction of the 2 cavities. After suprapubic prostatectomy the sphincter of the bladder is the compressor urethræ. There is no possibility, as there is no necessity, of restoring the internal sphincter.

Obstruction following prostatectomy should be treated with dilating instruments by way of the urethra or by open operation.

J EDWIN KIRKPATRICK, M D

Katz T. Factors That Have Contributed to Improvement in the Operative Results of Prostatectomy. (Quels sont les facteurs qui ont contribué à l'amélioration des résultats opératoires de la prostatectomie?) *J d urol mèd et chir*, 1930, LXIX, 473.

Katz first critically discusses the various methods of examining the urine. He states that urinalysis is insufficient alone and inexact, and that cystoscopy has not met expectations. Of the colorimetric methods, he now employs only the indigocarmine test. He reminds us that a number of factors outside the

kidney may influence the elimination of a dye and sodium chloride and thus give rise to error. Cryoscopy of the blood is more reliable than cryoscopy of the urine and when repeated is of prognostic importance.

From a study of 3,000 urological cases Katz concludes that excess of indican in the blood (he is careful to point out that indican is a normal constituent of the blood) always denotes renal insufficiency and that the indican test of renal function is a particularly sensitive test and more dependable than many others. A high content of indican in the blood that is not lowered by suitable treatment indicates an irreparable lesion in the kidney and contra indicates prostatectomy.

RN (in French a *ole résiduel* in German *Rest stickstoff*) must not be confused he states with the residual nitrogen of American terminology. RN is the incoagulable non colloidal free nitrogen of the blood which is not bound to albumin. Seventy five per cent of it is formed of urea and the remainder of uric acid, ammoniacal nitrogen, various amines, creatinin, indican and what the Americans term residual nitrogen. A high RN is not invariably a sign of insufficiency of the kidneys but a normal RN does not signify that the kidneys are normal. An elevated RN may remain constant while the patient's condition becomes worse.

The pre operative preparation of the patient for prostatectomy which is given in Katz' cases consists in disinfection by the oral administration of salol, urotropin or methylene blue stimulation of the heart and in nearly all cases double vasectomy to control epididymitis. Double vasectomy is done also in cases in which the radical operation must be refused. The radical operation is refused in the cases of patients with arteriosclerosis who have had attacks of apoplexy, patients with advanced chronic myocarditis and obese patients with a fast pulse and low blood pressure.

Katz rejects ether and spinal anesthesia for prostatectomy. He performs the operation under local anesthesia induced by injection of the nerve trunk or by infiltration.

Of great importance in the operative technique is hemostasis obtained by catgut sutures joining the vesical mucosa to the capsule and by over and over catgut suturing around the borders of the bed of the prostate. All bleeding small vessels of the capsule and the vesical mucosa should be included in these sutures and the large cavity where the prostate rested should be reduced to the dimensions of a cherry. Into the cavity Katz introduces a small wick drain to control parenchymatous hemorrhage. He is strongly opposed to tamponade, the use of balloons, and all other blind and non surgical methods to control hemorrhage.

In the 452 cases in which Katz has performed prostatectomy since 1920 the mortality was only 3.4 per cent and there was no postoperative hemorrhage, uræmia, or pneumonia.

FLORENCE A. CARPENTER

Herzenberg G. The Question of the Pathogenesis and Etiology of Cystic Formations of the Testis and Epididymis (Zur Frage der Pathogenese und Aetiology der cystischen Bildung des Hodens und des Nebenhodens). *Ztschr f urol Chir*, 1930, xxiv, 27.

On the basis of twenty six cases the author arrives at the following conclusions:

Serous and seminal cysts are differentiated by their contents and their location. The former must be considered cysts of the visceral surface of the tunica vaginalis of the epididymis and the tunica subabdominalis of the testis. The latter are situated in the rete testis and the coni vasculosi.

Subserous cysts occur relatively often (from 12.5 to 30 per cent of cases) cysts in the region of the rete testis and the coni vasculosi (spermatocoeles) less frequently (from 2 to 8 per cent of cases), and subabdominal cysts very rarely (0.05 per cent of cases). Hydatids of Morgagni are found almost always on the surface of the testis and epididymis (from 83.5 to 96 per cent of the cases).

Serous cysts develop very slowly and rarely exceed the size of a cherry. Seminal cysts develop between the testis and the epididymis and may become extravaginal. Serous cysts are situated on the free surface of the epididymis and always remain intravaginal. Spermatocoeles develop in the manner of retention cysts from the canaliculi of the rete testis and coni vasculosi. Sometimes they may be the result of dilatation of the superior ductus aberrans. Hydatids have no connection with the seminal ducts and do not take part in the formation of seminal cysts. Serous cysts are probably congenital structures. They develop from the so called hydatids of the visceral membrane of the tunica vaginalis propria of the epididymis and perhaps from the hollow pedunculated hydatids. The primary cause of the development of spermatocoeles must be sought in the anatomical structure of the seminal ducts. A secondary cause may be one or more external factors such as trauma, inflammation or sexual disturbances. The cause of serous cysts is unknown.

The article contains eleven illustrations.

COLMERS (Z)

## MISCELLANEOUS

Mertz H O and Smith L A. Posterior Spinal Fusion Defects and Nerve Dysfunction of the Urinary Tract. *J Urol*, 1930, xxiv, 41.

The most common and constant signs of spinal cord lesions are intermittent or constant incontinence of urine, bladder retention with a spastic or relaxed sphincter and enuresis.

That considerable confusion exists in the explanation of ureteral dilatation and urinary stasis without ureteral obstruction is evident from the multiplicity of causes to which these conditions have been attributed by Bachrach, Bouchard, Necker, Grant, Kermanner, Wagner, Andler, Israel and others.

A careful study of roentgenograms available at the Indiana University Hospitals indicates that a diagnosis of fusion defects before ossification is normally complete might be made earlier than is the case at the present time.

The usual fusion defect, spina bifida occulta, does not produce pressure on the spinal cord. Altschul, Hintze, Hoelen, and Levi state that positive evidence other than roentgenographic evidence must be present.

A complete urological examination of thirteen children, nine of whom had spina bifida occulta, revealed an unusual number of non obstructive dilatations of the upper urinary tract. The vesical sphincter was involved most often, the bladder wall next most often, and the ureteral muscles less often. Five of the children had rectal incontinence. The urological treatment was directed toward infection.

Of nineteen cases in which laminectomy was done for the relief of symptoms, a cure was obtained in twelve and no improvement in three. In an additional case death followed transplantation of the trigone.

Thirty-nine cases, including thirteen treated by the authors, are reported in detail. Thirty-four of the patients complained of day or night incontinence of urine. In fifteen, this was associated with bladder retention. Three had retention without inconti-

nence. In eleven cases there was urinary reflux with dilatation of the ureters and renal pelvis. In one case with severe infection there was no reflux.

Involvement of the rectal sphincter was present in eleven cases and involvement of the lower extremities in eleven. In four, there was a disturbance of sensation about the legs, vulva, and anus, and in eight there was an unusual skin condition over the lumbosacral area. Of two patients operated upon after the development of paræsthesia or trophic changes in the extremities, one was cured and the other benefited.

The findings and results of operation indicated that the nerve dysfunction was due to pressure and was not caused by the bony hiatus alone. This explains the frequent X-ray findings of spina bifida occulta in the absence of clinical evidence of nerve dysfunction. One patient presented a true myelodysplasia, and another a scar in the arachnoid. Twelve patients who were operated upon were cured, six were benefited, and three were not benefited.

Roentgenograms were made in thirty-three cases. These showed various degrees of spinal fusion anomaly. Of nine cases in which subarachnoid injections of lipiodol were made, seven showed definite evidence of pressure. In one case the findings were indefinite and in another misleading.

CLAUDE D. PICKRELL, M.D.

# SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS

## CONDITIONS OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

**Gold E.** The Non-Specific Diseases of the Epiphyses During the Period of Growth (Die nicht spezifischen Erkrankungen der Epiphysen im Wachstumalter) *Monatsschrift für Kinderheilkunde* 1930, 3, 404

Non specific diseases of the epiphyses during the period of growth are not so very rare. The first to appear is Legg Calve Perthes disease of the hip osteochondritis coxae juvenilis which simulates tuberculous coxitis in the active stage. It differs from the latter principally in its constantly favorable outcome. It occurs in children between the ages of five and twelve years, and more often in boys than in girls. Flexion is free, rotation limited and abduction inhibited. In the roentgenogram no atrophy of the bone is seen, but the epiphysis is shown to be flattened and uniformly compressed, the calcium density increased, and the neck of the femur thickened. The end result is always good, only abduction sometimes remains limited. The duration of the disease is long, usually three or four years.

Another condition of the type under discussion is the so called Koebler's disease which appears in the head of the second or third metatarsal not only during the period of growth but also later. Swelling and tenderness are present in the diseased area and the roentgenogram shows flattening of the head of the metatarsal bone.

To the same group of conditions belongs the malacia of the semilunar bone of Kienboeck, which is most common in persons between the ages of twenty and thirty years who are doing heavy labor. This disease is often preceded by trauma and is associated with pain and swelling of the wrist. In the roentgenogram the semilunar bone shows increased density from calcium and is seen to be compressed proximodistally. The end result of the condition is usually unfavorable because of deforming arthritis.

According to Axhausen the basis of all of these conditions is the so called aseptic necrosis of the epiphyses due to disturbances of nutrition caused by emboli. According to others it is a necrosis due to trauma. Constitutional factors may play a part especially in epiphyseolysis of the head of the femur, which frequently occurs in persons with eunuchoid features. All of the conditions are characterized by outward rotation of the foot. As they are absolutely benign, operative treatment no longer seems justified except in malacia of the semilunar bone.

The juvenile dorsal kyphosis characterized by increased calcium density of the vertebral epiphyses and absence of a true gibbus always occurs in youth and in the upper part of the thoracic portion of the spine.

In conclusion the author discusses Koebler's disease of the navicular bone of the foot which occurs in children between the ages of five and nine years and is manifested by slight pain and a rise in the temperature and swelling in the region of the navicular bone. This condition is often bilateral. The roentgenogram shows the navicular bone to be flattened and thickened and to have a high calcium content. Often it is broken into several pieces. The cause of the disease is unknown. The end result is always perfect restoration to normal after a longer or shorter interval. Hence operative treatment is never indicated. MAXIMILIAN HIRSCH (Z)

**Leriche R. and Fontaine, R.** Painful Post Traumatic Osteoporosis (Osteoporoses douloureuses post-traumatiques) *Presse médicale* Paris 1930, xxxiii 617

In this article attention is called to the surprising changes which sympathectomy brings about in cases of epiphyseal rarefaction due to trauma. It may be considered a law of osteology that every active hyperemia causes a rarefaction of bone, and that rarefaction never occurs without an active hyperemia. Post traumatic rarefaction is caused by the active hyperemia resulting from the traumatism. It is paradoxical that sympathectomy, which produces an active hyperemia, has a beneficial effect on rarefaction due to trauma. The demonstration of the influence of sympathectomy on the reconstruction of bony tissue juxta articular and articular pain and the function of the joints is of great physiological importance as it draws attention to a completely neglected point in the biology of bone.

Sympathectomy is of interest also from the point of view of therapeutics because it may restore the function of traumatized and ankylosed joints.

The authors characterize as erroneous the common belief that osteoporosis is the result of bone atrophy due to functional inactivity and insufficient circulation. They have operated in nineteen cases of osteoporosis. In sixteen periarthral sympathectomy was done—peribrachial sympathectomy in six, perisubclavian sympathectomy in five, and per femoral sympathectomy in five. In three cases because of the extent and the age of the lesion ramisection was done—cervical ramisection in two and lumbar ramisection in one. In comparatively recent and simple cases in young subjects peribrachial sympathectomy is done for lesions at the carpus, perisubclavian sympathectomy for lesions about the shoulder, per femoral sympathectomy for lesions of the tarsus, and sympathectomy on the external iliac artery for lesions of the knee.

The authors report sixteen cases of post-traumatic osteoporosis. JACOB L. FLEIN, M.D.

Huët G J Blood Examination and Surgical Tuberculosis (Blutuntersuchung und chirurgische Tuberkulose) *Ztschr f Tuberk*, 1930, I, 423

Huet attempts to draw conclusions of importance to the general practitioner from the results of examinations of the blood of children with surgical tuberculosis. In the course of three years he made 297 blood examinations in 75 cases. The examinations included leucocyte counts, studies of the types of white cells, and determinations of the sedimentation time of the erythrocytes.

All cases with large progressing abscesses or the breaking down of tissue with profuse suppuration showed marked acceleration of the sedimentation time, a quite pronounced leucocytosis and a distinct shift to the left in the white cells, whereas those in which the abscess had been emptied showed a normal sedimentation time and leucocyte count and frequently no shift to the left in the white cells. The blood picture was normal also in those with simple bone destruction.

Accordingly it appears that changes in the blood are dependent not so much on destruction of tissue in itself as on resorption of the products of decomposition. Acceleration of the sedimentation time was found most frequently in the cases of patients who had had the disease for only a relatively short time. As soon as the focus became encapsulated or as soon as immobilization of the diseased part produced conditions unfavorable for resorption the sedimentation time returned to normal sooner or later. Frequently a subsequent increase in the sedimentation time occurred when the patient was mobilized. Although at this time no clinical evidence of deterioration of the patient's condition was apparent, it must be assumed that in such cases the disease had not healed completely. It is evident that the sedimentation time is an extremely delicate indicator, being influenced by stimuli which are too weak to induce an increase in the temperature or local pain.

Worthy of note is the relationship between the sedimentation time and the shift to the left in the white cells. In only a third of the children did Huet find a constant agreement between them. In the others he found acceleration of the sedimentation time without a shift to the left in the white cells in 78 cases and a shift to the left in the white cells without acceleration of the sedimentation time in 41. He has gained the impression that some patients tenaciously retain acceleration of the sedimentation time and others the shift to the left in the white cells.

Huet emphasizes that the blood examination cannot be relied upon alone to indicate when mobilization of the patient is permissible. In the diagnosis of the breaking down of tissue he attributes significance only to constant acceleration of the sedimentation time with a leucocytosis and a shift to the left in the white cells.

In conclusion he states that examinations of the blood are of definite aid in the determination of the

processes at work in the disease foci, especially if a series of such examinations are made, but that they should be supplemented by other clinical tests and by roentgenological examinations. DUCHON (Z)

Bastos Ansart, M Postural Treatment of Infantile Paralysis (Tratamiento postural de la parálisis infantil) *Arch de med, ciruj y especial*, 1930, XI, 493

The treatment of infantile paralysis consists in serum therapy during the acute period, physical therapy including electricity, massage and diathermy, during convalescence, and surgical operation or the use of orthopedic apparatus for any residual paralysis.

Postural treatment to prevent secondary complications of the paralysis should be begun in the acute stage of the disease. The affected limbs should be kept in positions which will prevent stretching of the paralyzed muscles, the action of gravity, the unopposed action of antagonist muscles, and weight-bearing. Such factors tend to destroy what remains of functioning muscle and to produce the permanent deformities and contractures which are the worst results of poliomyelitis.

Macroscopic and microscopic examinations of muscles affected by anterior poliomyelitis have demonstrated even in muscles most seriously affected, remnants of striated muscle capable of regenerating and increasing in number. The possibility of muscular regeneration has been proved histologically. It seems evident that the muscle is changed quantitatively but not qualitatively by the disease.

The article contains a table showing the percentage of cases in which the different muscles are affected, and illustrations of the postures indicated for the prevention of contractures.

AUDREY G MORGAN, M D

Flevez Twenty-Two Cases of Intracapsular Rupture of the Tendon of the Long Head of the Biceps Brachialis (Vingt deux cas de rupture intracapsulaire du tendon du long biceps brachial) *Bull et mém Soc nat de chir* 1930, lvi, 554

Guibal and Ditscheir Two Cases of Disinsertion of the Tendon of the Insertion of the Biceps (Deux cas de désinsertion du tendon distal du biceps) *Bull et mém Soc nat de chir* 1930, lvi, 554

Rupture of the biceps may occur through the tendon of the long head or through the tendon of insertion. In the tendon of the long head the rupture may occur at the level of the glenoid cavity, in which case there is a true disinsertion with or without evulsion of bone. It may be also intra-articular or extra-articular, or take place at the musculotendinous juncture. The intra-articular type of rupture is the most common. Glenoid disinsertion and extra-articular ruptures are very rare. According to Flevez, rupture of the tendon of the long head of the biceps is usually extra-capsular.



Rupture of the tendon of insertion of the biceps always occurs at the point of insertion of the tendon on the bicipital tuberosity. There is a true avulsion with rupture of the aponeurotic expansion of the biceps.

Fievez states that rupture of the tendon of the long head of the biceps is quite common especially in old persons. According to Guibal, ruptures of the tendon of insertion are rare. Among sixty six ruptures of the biceps Loos found only three of the latter type.

Fievez attributes rupture of the tendon of the long head of the biceps in part to a diathesis causing weakness of the tendon tissue and in part to dry arthritis with the production of osteophytes at the level of the bicipital groove. He states that frequently the rupture occurs progressively from wearing away of the tendon over the rough spot.

Rupture of the tendon of insertion results from violent traumatism exerted on the arm in the position of pronation. In this position the tendon is partially rolled about the radius. The two patients whose cases are reported by Guibal and Ortschelt had admirable muscular development and showed no evidence of syphilis, rheumatism, osteoporosis or synovial inflammation.

Rupture of the tendon of the long head of the biceps does not require operation but in rupture of the tendon of insertion surgery is always necessary. Rupture of the tendon of insertion may be treated by suture of the distal portion of the tendon to the torn normal insertion or suture of the torn end to the bicipital tuberosity. Guibal and Ortschelt used the second method. Simple suture has given satisfactory results.

JACOB E. KLEIN, M.D.

Calve J. and Galland M. The Intervertebral Nucleus Pulposus (La nucleus pulposus inter vertebrae). *Presse med. Par.* 1930 xxxviii 520.

The nucleus pulposus is the gelatinous ball in the center of each intervertebral disk. It has an anatomy, physiology and pathology of its own. The authors give an anatomical description of the disk and the adjacent vertebral surfaces.

The nucleus is deformable, readily displaced and under pressure. The authors have found that it forms a rotatory axis between the two adjoining bodies. Upon it are exercised the flexion, extension and lateral movements of the vertebral bodies. The effects of suppression of the nucleus are evident in Pott's disease.

Many affections are engendered by abnormal displacements of the nucleus. The authors' discussion of pathological conditions is confined to (1) calcification of the nucleus, (2) posterior displacement of the nucleus, (3) balled disks and vertebral osteoporosis and (4) hernia of the nucleus into the spongy portion. Schmorl encountered hernia of the nucleus in 38 per cent of a number of spinal columns representing all ages. It was more common in males than in females. Schmorl agrees with Schanz that it is very frequently associated with kyphosis. The

authors believe that painful kyphosis in adolescents, and often epiphysitis is due to nuclear hernia. They call attention to the fact that in a group of kyphoses which occur in adolescents between the ages of four teen and eighteen years and are often painful and only slightly reducible, the roentgenogram shows three, four, or five pinched and very irregular disks in the middle dorsal region.

FLORENCE A. CARPENTER

Borchers G. Primary Acute and Subacute Purulent Osteomyelitis of the Vertebrae (Ueber die primäre akute und subakute Osteomyelitis purulenta der Wirbel). *Arch. f. klin. Chir.* 1930 clix 163.

The cause of hematogenous osteomyelitis of vertebrae is the same as that of osteomyelitis in general. The bacteria responsible are the staphylococcus aureus, the staphylococcus albus and the streptococcus. In the male the condition occurs most frequently in the lumbar vertebrae and in the female most frequently in the dorsal vertebrae. It is most common during the period of growth of the bones. According to the development of the infection it is of two types: that in which the infection is primary in the periosteum and that in which it is primary in the marrow.

Discharge of pus into the spinal canal has been known to occur. Extension of the infection to the spinal cord leads to myelitis or even to breaking down of the cord. It has a very unfavorable prognosis as it causes motor and sensory disturbances of the extremities or disturbances of the bladder and rectum. If the pus breaks into the paravertebral tissues it may wander downward along the muscle sheaths or the anterior longitudinal ligament as a gravitation abscess. In osteomyelitis of the cervical vertebrae the danger of extension of the inflammatory process to the brain is great and the phrenic nerve (fourth and fifth cervical segments) is endangered. In osteomyelitis of the thoracic vertebrae the pus may perforate into the pleural cavity and there is danger also of the formation of a mediastinal abscess. In osteomyelitis of the lumbar vertebrae the pus makes its way downward as a gravitation abscess along the psoas muscle. Deformities and deviations (gibbus, scoliosis) are rare and soon disappear spontaneously. According to Volkmann they are due merely to inflammatory irritation and contraction of the neighboring muscles.

Purulent osteomyelitis of the vertebrae runs an acute course. Most frequently involved are the arches of the vertebrae. At first the condition is manifested chiefly by general symptoms but later the local symptoms are more marked. Congestive pain is absent or is less severe than in tuberculous spondylitis. Rigidity of the spine develops. Fluctuation and a doughy swelling on the back may be noted. The cutaneous veins over the affected region are prominent. Perforation of the pus into the spinal canal is followed by cervical rigidity and symptoms of nerve compression.

Possible complications are pachymeningitis of the upper cervical cord, purulent spinal leptomeningitis, infiltration of the retropharyngeal tissues (dyspnoea) perforation of the pleura, mediastinal abscess, septic infarction and abscess of the lungs, and symptoms of compression of the ganglia of the sympathetic ganglia and the celiac plexus.

The diagnosis of vertebral osteomyelitis is difficult. When the history is taken the patient should be questioned with regard to the previous occurrence of furunculosis, paronychia, angina, and injury. The illness begins suddenly with acceleration of the pulse, a rising temperature, tenderness of the vertebrae to pressure, and a leucocytosis of from 10,000 to 20,000. Roentgen examination is of aid only after the second week.

The prognosis is very unfavorable. It depends on the virulence of the infecting micro organism, the development of complications, the patient's resistance, and the time at which treatment is begun. It is most favorable in osteomyelitis of the thoracic vertebrae.

The treatment must be surgical. In prophylaxis, attention must be directed to the portals of entry of the infecting agent. HASSLINGER (2)

Sicard, A. A Case of Hoffa's Disease, Proliferation of the Subpatellar Fatty Tissue of Traumatic Origin (Un cas de maladie de Hoffa, prolifération d'origine traumatique du tissu graisseux sous rotulien). *Bull et mem Soc nat de chir*, 1930, lvi, 646.

The case reported was that of a man sixty-five years of age who for several years had had a painless prepatellar tumor on the left knee which had increased slowly in size. Following a fall in which the knee was struck violently the tumor grew rapidly and became very painful. A diagnosis of blood infusion in a pre-existing hygroma was then made, the tumor punctured, and a compressive bandage applied. After the puncture the mass returned to its former size, but the pain persisted.

Examination by Sicard revealed a prepatellar hygroma passing above the superior border of the patella, effacement of the two lateral subpatellar surfaces, and a tumefaction on each side of the patellar ligament which showed fluctuation. Passive movements were not limited, but extension provoked slight pain. There was no thickening of the synovial membrane, and there were no foreign bodies.

At operation the hygroma was removed through a prepatellar median vertical incision. A subpatellar curved incision with its concavity upward which was then made down to the anterior tuberosity of the tibia disclosed a retropatellar firm and infiltrated fatty mass the size of a mandarin orange. This was dissected down to the patellar ligament and above to the synovial membrane. When the synovial membrane was opened two synovial fringes projected to the interior of the articulation on the internal side. These were extirpated with the fatty

mass. The synovial membrane was then closed, the wound sutured, and a compressive bandage applied. Recovery resulted.

MANIER, who reported Sicard's case before the Society, stated that the condition was described as a clinical entity by Hoffa in 1904. It is characterized anatomically by proliferation of the subpatellar fatty tissue, clinically, by pain usually located in the anterior part, effacement of the parapatellar flat surfaces, and a soft fluctuating mass, and histologically, by an inflammatory hyperplasia of the adipose tissue and its invasion by fibrous tissue. It should be thought of in the cases of patients presenting sequelae of injury to the knee. For mild cases, Rammstedt has advised conservative treatment consisting of the use of compressive bandages, sand baths, hot air, and massage. When the inflamed fatty mass is well marked it may be extirpated.

FLORENT A. CARPENTER

## SURGERY OF THE BONES, JOINTS, MUSCLES, TENDONS, ETC

Leo, E. Autoplastic Graft of Blood in Bone Cavities (L'innesto autoplastico di sangue nelle cavità ossee). *Chir d'organi di movimento*, 1930, xiv, 703.

To hasten the delayed healing of bone cavities after loss by suppuration or resection, the author uses an autoplastic graft of blood. This is simply Schede's aseptic blood clot. It contains elements which are able to resist any infection that may still be present and stimulate healing. An important advantage of the procedure is due to the fact that blood can always be procured from the patient without any difficulty or special operative procedure or mutilation. KELLOGG SPEED, M D

Kartaschew, S. I. Contributions on the Question of Free Autoplastic Bone Transplantation. Experimental Investigations with Special Reference to the Transplantation of Fine Osseous Fragments and Spicules (Beiträge zur Frage der freien autoplastischen Knochen transplantation. Experimentelle Untersuchungen mit besonderer Berücksichtigung der Transplantation feiner Knochen stückchen und splitter). *Arch f klin Chir*, 1930, clvi, 758.

The author has conducted a very instructive series of experiments on free transplantation of bone with special reference to the implantation of so called "bone salad."

When a defect in the ulna was bridged over with very fine bone spicules and other osseous debris removed from the other ulna and the second defect was filled in by the section of bone removed to form the first defect, an active growth of osteogenic tissue arising from the periosteum and endosteum of the bone fragments was soon observed if the periosteum, bone marrow, and endosteum were preserved. The bone fragments retained the staining properties of their cells for a long time—in some instances for as long as from nine months

to a year. However, the ultimate complete disappearance of these cells demonstrated that the bone tissue itself took no active part in the process of regeneration and that the latter was due only to the periosteum. The surrounding connective tissue participated in the new formation of tissue by metaplasia. At the points of mechanical stress, i.e. at the ends of the defect, cartilaginous tissue appeared. After the continuity of the bone had been re-established changes began which finally led to the formation of a continuous marrow cavity.

In the defect which was filled with a solid portion of bone the osseous tissue died off more quickly. The regeneration took place from the periosteum and from the ends of the bone in which the defect was made.

Spicules of bone implanted into the musculature of the back also regenerated a section of bone. Here too the surrounding connective tissue took part in the regeneration by metaplasia. However, because of the absence of functional stimulation cartilage did not develop and the newly formed muscle bone ultimately became resorbed.

When a bone defect was filled in with bone spicules from which the periosteum but not the endosteum or the marrow was removed, regeneration occurred less completely and considerably less vigorously. However, the regenerative power of the endosteum did not seem to be much less than that of the periosteum.

When both periosteum and endosteum were removed prior to mortellation of the fragment, no bone regeneration occurred in the bone defect and no bone was formed in the muscles of the back. Metaplastic formation of bone tissue could not be demonstrated in any of these experiments. The bone tissue of the transplanted fragments soon disappeared.

These findings demonstrate the exclusive rôle of the periosteum, endosteum and marrow in the healing in process of autoplastically transplanted bone and show that mortellation of the transplant favors rapid and complete healing in because the spicules stimulate metaplasia of the surrounding connective tissue.

MAX BUDDE (Z)

#### Krida. A. Reconstruction of the Anterior Crucial Ligament of the Knee Joint. *Surg. Clin. North Am.* 1930, 5, 7.

In 1926 Krida reported three cases of crucial ligament injuries, in two of which the result of operation was good and in one of which it was doubtful. Since that time he has operated upon five additional cases. In one the operation failed completely, in three it gave a good result and in one it was performed too recently for judgment of the outcome.

Krida states that there can be no doubt that in gross dislocations of the knee both ligaments are torn. Although in such cases the crucials do not become repaired the joint may be functionally useful. Gross dislocations occur usually in young

adults whose adaptability is great enough to permit the quadriceps extensor muscle to take on what may be called a vicarious or compensatory function and maintain the functional stability of the joint.

In cases of gross dislocation or very recent injury operative intervention is contra-indicated. Surgery is to be considered only for cases of chronic or acute recurrent disability.

The outstanding sign of crucial ligament damage is instability.

In chronic cases the wearing of a brace or the use of crutches is necessary. There is a history of severe injury of the knee joint followed by marked disability uninfluenced by physiotherapeutic or other measures or of comparatively moderate injury followed by chronic or recurrent effusions into the joint. On examination the increased and characteristic anteroposterior mobility is found. This may be associated with increased lateral mobility. Operation will sometimes demonstrate that the ligaments are not ruptured but are frayed out and greatly relaxed.

For such cases there are only three possible forms of treatment: (1) permanent brace wearing, (2) arthrodesis and (3) operative reconstruction.

In the acutely recurrent case the knee suddenly gives way in the course of comparatively mild exertion because of insufficiency of the quadriceps. Anteroposterior hypermobility is present but there is little or no increase in lateral mobility.

Krida states that he has never seen a case of isolated injury of the posterior crucial ligament.

The operative technique which Krida uses is based on that described by Hey Groves and that of Smith who modified the Hey Groves procedure to include the construction of an internal lateral ligament. For exposure of the joint Krida employs what he describes as a "general utility incision" rather than the horseshoe incision. This extends from the tibial tubercle upward along the inner border of the patella and then upward between the vastus internus and rectus muscles to the top of the quadriceps pouch. With displacement of the patella over the external condyle and flexion of the knee it gives very satisfactory exposure.

The operation is done below a tourniquet placed as high on the thigh as possible. After the joint has been exposed and its condition has been determined, a separate long incision is made on the outer side of the thigh, a strip of fascia lata about 10 in. long and  $1\frac{1}{2}$  in. wide is stripped from above downward, its lower end being left attached and a cord is made of the strip by rolling its sides together. This having been done, the strip is left *in situ* temporarily and the incision closed over it with two or three towel clips. The patella is then displaced and the joint flexed to a right angle. A  $\frac{1}{2}$  in. drill hole is made through the external condyle in a direction somewhat from above downward to a point somewhat posterior in the intercondylar notch. A second drill hole is made through the internal tuberosity of the tibia from below upward and from

within outward to a point within the joint approximately at, or somewhat in front of, the usual area of insertion of the anterior crucial ligament. The lower portion of the long incision is then again exposed, an opening is made through the vastus externus into the knee joint, and the fascial strip is pulled through. The strip is then pulled through the femoral and tibial drill holes to the antero internal surface of the tibia, unrolled, pulled quite tight with the joint flexed about 20 degrees, and sutured firmly to the periosteum. The remainder of the strip is turned upward onto the internal condyle of the femur. The bone is bared and the synovia sutured over the strip. The incisions are then closed and a compression dressing is applied.

The joint is immobilized in flexion of 20 degrees for three weeks. At the end of that time physiotherapeutical measures directed toward development of the quadriceps are instituted. When walking is begun a support is used at first, but no brace is applied. Passive motion is not employed.

H FARLE CONWILL M D

## FRACTURES AND DISLOCATIONS

Bognar, von Habitual Luxation of the Lower Ulnar Joint (Die habituelle Luxation des unteren Ulnargelenkes) *Verhandl d deutsch orthop Gesellsch*, 1930, p 413

Of the fifty six dorsal and volar luxations of the lower ulnar joint reviewed by the author the majority were of the dorsal type. On the basis of the roentgen findings, von Bognar believes that the displacement is favored by deformity of the bones of the forearm resulting from previous constitutional disease (rachitis) or injury (fracture).

The diagnosis of volar dislocation is easy with the aid of roentgenography, but in cases of dorsal dislocation it is necessary to rule out subluxation of the ulna and, in the cases of children, semi-dislocation of the triangular cartilage, which closely resembles dislocation of the distal end of the ulna. Dorsal dislocation may be confused also with Madelung's deformity of the wrist.

For the correction of habitual dislocation of the ulna it is recommended that the two bones of the forearm be held together by means of a strip of fascia.

B VALENTIN (Z)

Hellner, H Spondylolisthesis, Traumatic Subtotal or Total Luxation in the Lumbosacral Region, and So-Called Prespondylolisthesis (Spondylolisthesis, traumatische Sub bzw Total luxation in der Lumbosakralregion und sogenannte Praespondylolisthesis) *Fortschr a d Geb d Roentgenstrahlen*, 1930, xli, 527

The author first reviews the literature on luxation in the lumbosacral region of the spine since the year 1854, when slipping of the fifth lumbar vertebra in front of the sacrum was first noted by Kaban and spontaneous spinal luxation was described by Lambi. Not until the X ray was employed in the

examination of the spine did it become possible to distinguish between the different types of luxation and explain them satisfactorily.

Anatomical factors which favor slipping of the fifth lumbar vertebra are the oblique sacral plane, the continuous pressure of the body weight on the lower end of the lumbar portion of the spine and variations in the position and shape of the articular processes of the fifth lumbar and first sacral vertebrae.

The most extensive studies of dislocation of the fifth lumbar vertebra have been made in America (Goldthwait and Lackum). Important anatomical studies have been published by Jaroschy, Gellert, Wegener, Neugebauer, Desfosses, and others. Schmorl demonstrated interesting anatomical conditions showing the condition before the traumatic congress of 1926.

Trauma plays a much less important role in spondylolisthesis than has been assumed. The author agrees with Jaroschy and states that a distinction must be made between luxations independent upon congenital variations and luxations caused by trauma.

Spondylolisthesis, the "spontaneous" variety of Lambi, develops slowly, even in the adult, and is dependent upon a spondylolytic or spondylolitic or traumatic subluxation and total luxation of the fifth lumbar vertebra with tearing of the intervertebral process with tearing of the intervertebral disk.

Spondylolisthesis may be congenital or traumatic, whereas traumatic luxation of the fifth lumbar vertebra is produced by trauma.

In spondylolisthesis the luxation occurs over a period of years and is usually of the dorsal type, whereas in traumatic luxation it is usually of the volar type.

In spondylolisthesis the luxation is usually of the dorsal type and is usually of the dorsal type, whereas in traumatic luxation it is usually of the volar type. In spondylolisthesis the luxation is usually of the dorsal type and is usually of the dorsal type, whereas in traumatic luxation it is usually of the volar type.

Spondylolisthesis may be congenital or traumatic, whereas traumatic luxation of the fifth lumbar vertebra is produced by trauma. In spondylolisthesis the luxation is usually of the dorsal type and is usually of the dorsal type, whereas in traumatic luxation it is usually of the volar type.

In 1924, White and Gill described a case of spondylolisthesis in the lumbosacral region of the promontory.

Scherb described a case of spondylolisthesis in the lumbosacral region of the promontory. The author states that the term "spondylolisthesis" is applied to the condition of the fifth lumbar vertebra.

The author states that the term "spondylolisthesis" is applied to the condition of the fifth lumbar vertebra. The author states that the term "spondylolisthesis" is applied to the condition of the fifth lumbar vertebra.

the intervertebral disk. For such cases the term "luxation or 'total luxation' seems more appropriate as complete spondylolisthesis never develops from subluxations of this type, the assumption of the presence of a congenital spondylolisthesis is far fetched, and true spondylolisthesis, in contrast to traumatic subluxation is preceded by trauma in relatively few cases. Only by including traumatic subluxation with spondylolisthesis is it possible to explain the frequency of the latter condition which has been reported by Americans. Traumatic subluxation is much more common than congenital spondylolisthesis. Spondylolisthesis cannot be ascribed to trauma medicolegally an influence exerted by trauma can be demonstrated only occasionally.

2. Subluxation of a vertebra in tuberculosis, tabes, or spondylitis deformans should not be characterized as spondylolisthesis (Wegener, Jaroschy) as the basic condition in the former is not an interarticular spondylolisthesis but a destruction of the intervertebral disk.

3. A small lumbosacral angle (of 120 degrees or less) may cause sacral pain but before such pain is ascribed to it all other possible causes should be ruled out. In the measurement of the lumbosacral angle the recommendations of Junghanns should be followed.

4. Lumbosacral lordosis in the presence of a normal or slightly increased inclination of the pelvis without limitation of mobility of the spine but with a roentgenologically demonstrated small lumbosacral angle and a nearly horizontal sacrum is an example of the constitutional form of the curvature of the lumbosacral portion of the spine which is described by Scherh as 'pointed sacrum'. This condition is not a forerunner of spondylolisthesis, it is rather the clinical antithesis of the latter. Therefore the term 'prespondylolisthesis' is not applicable to it.

5. The changes in the lumbosacral junction may be classified as follows: (a) spondylolisthesis which depends upon a congenital malformation, a spondylolisthesis; (b) traumatic subluxations and fractures with total luxation (these two groups are pathological changes); and (c) various types of constitutional lumbosacral curvatures of the spine on the border line between the normal and the pathological, one of which is the pointed sacrum described by Scherh.

FINGEL (Z)

**Junghanns H. Spondylolisthesis. Thirty Pathologic Anatomically Examined Cases (Spondylolisthese 30 pathologisch anatomisch untersuchte Fälle). Beitr z Klin Chir, 1930, cxlvii, 554.**

Thirty cases of true spondylolisthesis were carefully studied anatomically and in part also histologically. Spondylolisthesis depends upon a congenital cleft formation in the interarticular cartilage. The cleft is always located at a typical site, just behind the lower border of the articular surface of the upper articular process. It differs in width

and does not always run parallel with the displacement of the vertebral body as the posterior portion of the interarticular cartilage may be elongated.

On histological examination of the interarticular cartilage the cleft was found to be filled with fibrous connective tissue. Occasionally, beginning calcification and ruptures with hollow spaces and minute hemorrhages were discovered.

With the exception of a single case, the cleft was always bilateral. The fifth lumbar vertebra was affected in twenty cases and the fourth lumbar vertebra in ten. Thirteen of the subjects were males and sixteen were females. The sex of one subject is not given.

Spondylolisthesis is a congenital anomaly. The author rejects the American theory that it is due to trauma. The condition must be differentiated from fractures and luxations.

Junghanns rejects also the prespondylolisthesis of Whitmann. For the corresponding postural anomaly of the sacrum he recommends the term 'acute sacrum' suggested by Scherh. He states that Whitmann's prespondylolisthesis is not a preliminary stage of spondylolisthesis.

HELLNER (Z)

**Soutter R. Congenital Dislocation of the Hip. An Operation for Defective Acetabulum. Surg, Gynec & Obst, 1930, li, 249.**

In cases of successful reduction of congenital dislocation of the hip with a poor acetabular shelf and in cases in which reduction is impossible a bony shelf may be constructed in the ilium above the head of the femur. This has been accomplished by turning down a part of the ilium above the head of the femur and transplanting a tibial graft into the space where the ilium was bent down.

In the author's method the capsule is exposed by reflecting the soft parts up and a slot extending well back and forward is cut through the inner and outer tables of the ilium just above the head of the femur. A square is then cut above the slot from the outer table and separated from the ilium at its lower edge and sides, the upper edge being left attached. Next a graft taken from a portion of the trochanter and the adjoining neck and shaft of the femur is driven into the slot. The outer end of the graft is sutured to the lower edge of the square which was bent outward from the ilium.

ELVEN J. BERNHILDER, M.D.

**Benedetti Valentini F. A Clinical Contribution on the New Muzzi Method for the Perfect Orthopedic Reduction of Fractures of the Diaphysis of the Femur (Contributo clinico al nuovo metodo de Muzzi per la perfetta ricomposizione ortopedica delle fratture diafysarie del femore). Policlin, I. om. 1930, xxxvii, sez. chir. 201.**

The Muzzi method is advocated for cases of fracture of the shaft of the femur, especially transverse fractures in which it is impossible to obtain complete reduction and operation must be done unless

an approximate correction is accepted. It has two stages. The first stage is an attempt to fit or lock together the two fractured surfaces. This attempt is made even when the fragments are greatly angulated. Sufficient time is then allowed for the formation around the apposed fragment surfaces of a callus with sufficient firmness to assure solidity of the apposition but soft enough to permit bending in any desired direction. The second stage of the procedure consists in bending the freshly united bone ends into perfect alignment. In detail, the method is as follows:

Under general or spinal anesthesia, the overriding and angulated femur is pulled by strong traction and bent laterally to overcome the tension of the soft tissues. A plaster dressing is then applied on the leg up to the level of the fracture. During the traction the operator palpates the fracture in order that he

may feel the bone ends come into contact. The locking of the ends is confirmed by X-ray examination. After the ends are locked, the plaster dressing is carried up onto the trunk to the ribs and the limb is held thus for about twenty days. At the end of that time the plaster is cut through at the fracture level, the angulated thigh is forced into a straight axis, and the plaster is reinforced to hold the corrected axial replacement as shown by X-ray examination. After the second stage, immobilization is continued for about forty days. At the end of that time massage and knee and leg movements are begun. A caliper splint is worn for from four to six months to prevent secondary deformities.

In cases in which there is evidence of interposition of muscle or fascia this method cannot succeed, operation is necessary to prevent pseudarthrosis.

KELLOGG SPED, M.D.

# SURGERY OF THE BLOOD AND LYMPH SYSTEMS

## BLOOD, TRANSFUSION

Fiolle Polinso and Gary Resection of an Intestinal Loop for a Lesion Occurring in the Course of Hemogenic Purpura Recovery Examination of the Specimen (Résection d'une anse intestinale lésée au cours d'un purpura hémogénique guérison examen de la pièce) *Bull et mém Soc nat de chir* 1930 151 603

A woman fifty three years old experienced a sudden intestinal hemorrhage of red blood without any premonitory symptoms or pain. Old ecchymotic spots were present on the lips gums and tongue. Palpation of the abdomen and examination of the blood gave no definite diagnostic aid but the roentgenogram showed a suspicious shadow in the large intestine and caecum of the sigmoid was suspected.

During exploration a second intestinal hemorrhage occurred. One of the loops of the small intestine presented a different appearance from the rest. It was rosy and spotted with small plaques similar to those noticed in the mouth. As it was drawn out it ruptured in the center of one of the plaques. The entire segment was resected. Uneventful recovery resulted.

Histological examination of the specimen showed absence of mucosa in the central zone and dissection of the subjacent layers. The parts bordering the zone were the site of a recent hemorrhage. The more distal tissues were slightly edematous.

The patient had had mild attacks of cutaneous purpura for six years. Four years before the intestinal hemorrhage she had an attack involving the tongue and lips. At the menopause a uterine polypus which developed in a region of severe hemorrhages was extirpated. The patient's daughter aged thirty years presents an analogous syndrome after the birth of a child she had a hemorrhage lasting twenty days and for a year has had bleeding from the gums. FLORENCE A. CARPENTER

Stich Hemorrhage Hemostasis and the Prevention of Bleeding (Blutung Blutstillung und Blutungs erhaltung) 34 Tag d. deutsch Ges f. Chir. Berlin 1930

The author first calls attention to the various forms of hemorrhage—rheus diaphoresis diapedesis and diuresis. A differentiation is made also between bleeding from trauma erosion sudden changes in pressure the spontaneous rupture of normal vessels neuropathic hemorrhages and bleeding in hemorrhagic diatheses (hemophilia cholera and thyroid disease).

With regard to the question as to how much blood a person can lose without dying Stich states that the answer is difficult because it is not known

exactly how much blood the normal person possesses. Modern colorimetric methods permit a more exact answer than the older procedures. With the former the conviction has been gained that under normal conditions the quantity of blood is constant—in males about 76 per cent, and in females about 69 per cent of the total body weight. The poor resistance of infants to surgical operation in the first weeks of life is explained by the fact that the ability to maintain a constant blood volume is developed gradually and is lacking in the very young.

Eppinger and his pupils showed that the body has reserve supplies of blood which may be withdrawn from or thrown into the circulation. On this basis they explained collapse which sometimes occurs when the loss of blood is not particularly large. The blood reservoirs are the spleen the skin the splanchnic area the portal circulation, and the capillary system.

The composition of the blood is also different in different locations and may be influenced by medication. Adrenalin causes an increase in the erythrocytes but a decrease in the plasma. Heverson and pituitrin act in the same way. In fatal hemorrhage the loss of fluid and the consequent inadequate filling of the vascular system play an important rôle in addition to the loss of oxygen carriers. However, the author rejects the Golitz theory of emptying of the cardiac pump.

Spontaneous hemostasis is a biological process. The author agrees with Stegemann and others who deny that coagulation is of chief importance in this phenomenon. Hemorrhage from a large vessel can not stop by thrombus formation alone. A clot obstructing the blood channel cannot form as long as the circulation is in progress. The pressure of the extravasated blood the contractility of the larger vessels and the capillaries are important factors in hemostasis as the newer studies of Magnus have shown. Stich reminds us also of the experiments made by Bier thirty years ago. Magnus and von Bernuth have shown that in hemophilia contractility of the capillaries is lacking. Bier called attention to the part played by the vessel wall in hemostasis. According to Stegemann however the most important factor in spontaneous hemostasis is automatic control. In this process the blood is deflected. The force causing the deflection is as yet unknown. The author calls attention to the fact that, after artificially induced anemia the small vessels suck up the blood because of blood hunger of the tissues so that when the Esmerch bandage is removed only slight bleeding occurs from the larger vessels. Progovski has made similar observations. The views of Stegemann have been contradicted but nevertheless have their justification. The processes

described prevail only in hemorrhages occurring under aseptic conditions. How hemorrhages occur in infection, whether by erosion of vessels or the dissolution of thrombi, is still problematical.

In artificial hemostasis we employ today essentially the methods which were used by Celsus and Galen. First there are the mechanical methods. Elevation, compression and flexion are employed. Under certain circumstances, sterile stent masses are of value. The artificial induction of anemia, torsion, forcipressure, and angiotripsy are also used. With regard to ligation nothing new can be added to the exhaustive report of von Gaza. Mass ligation as used during the time of Pare should be abandoned. The artery should be dissected as thoroughly as possible from the adjacent tissues and each vessel should be ligated individually. In this way, after-bleeding is best prevented. In the author's opinion, a double reserve ligation and looping of the ligature are superfluous. The leaving of clamps in place is also unnecessary, the author has not done it for years. Transfixations should be avoided when possible. Ligation in continuity should be done only under very definite conditions. Sometimes a vessel which is difficult to find becomes clearly visible after irrigation with sodium chloride solution. Tamponade is regarded by Stich as essentially an emergency measure although in cavities and under provisional skin sutures it is of great value and indispensable. Bone hemorrhages are controlled with sterile wax or ivory pegs.

In contrast to these mechanical measures, hemostyptics accelerate the clotting process. They exert their effect partly through surface adsorption. Living or prepared tissue is frequently used for this purpose. Vicocoll is a valuable agent. It provides a living tampon and has been used by the author to good advantage in parenchymatous bleeding during prostatectomy and other operations. Recently it has been recommended also for skull hemorrhages. Its action is not purely mechanical. Stich mentions also Kuemmel's absorbable tampon material.

According to the work of Fono, Morawitz, and others, all cells contain substances which increase the coagulating elements in the blood. Mobilization of these elements comes into consideration especially in the hemorrhagic diatheses. In hemophilia, chiefly parenchymatous hemorrhages occur. Determinations of the bleeding time and the clotting time do not always give uniform results and do not always agree. One of the most important factors is loss of contractility of the capillaries. In cholemic bleeding, conditions are different. One and twentieth per cent of all bile tract operations are fatal because of it. Even in icterus of short duration, the tendency to bleed sets in after two weeks, attains its maximum in from four to six weeks, and is not entirely gone when the icterus disappears. Dangerous and severe retroperitoneal hemorrhages frequently occur from one to two weeks after the operation. These are due, not to the retention of bile acids, but to metabolic disturbances consequent upon hepatic

insufficiency. The opposite condition, the presence of a biliary fistula, may lead to hemorrhage as a result of changes in the calcium metabolism (Kuettner). On a similar basis, thyroid disturbances favor bleeding. The coagulability of the blood is diminished in most cases of Basedow's disease and is increased in hypothyroidism.

Fono states that a good hemostyptic should work when applied locally as well as when given orally, subcutaneously, or intravenously. It must be sterilizable and preservable. Blood serum is used as a hemostyptic. Perthes says that in fresh defibrinated serum there are elements which accelerate coagulation of the blood. The use of diphtheria serum has often been disappointing (Schloessmann). Possibly in such cases the serum was too old. The best method of obtaining hemostasis is transfusion, which also best restores the blood lost. Forty cubic centimeters of blood suffice. Intramuscular injections are not effective. Organ extracts made from lung, spleen, muscle and struma are irregular in their action. Coagulen, made by Fono from blood platelets, is good. It is effective when given intravenously as well as when administered orally or applied locally. The method by which it works is variously explained. Perhaps one effect is exerted on the vessel wall.

Clauden is probably as good as coagulen. The author frequently uses gauze saturated with clauden. Paravenous injections sometimes cause necrosis. Stich has been unable to confirm the prophylactic action claimed by some. He has had no experience with the English preparation hemoplastin, but states that this substance is recommended by many—among others, the surgeons of the Basle Clinic. The application of fibrin rich muscle has only a local action and is not an ideal procedure.

Every hemorrhage causes a disturbance in the osmotic balance which produces a change in the coagulability of the blood. Attempts have been made to correct this by the infusion of salt or glucose solutions. In hemophilia no effect was apparent, and in other conditions an effect was questionable. More effective, under some circumstances, is blood stasis produced by ligating the four extremities or variations in pressure produced by the new procedure of Sauerbruch.

An attempt has been made to increase the viscosity of the blood by the administration of gelatine, but the hopes placed on this procedure have not been realized. When the gelatine was given orally it failed entirely. The results obtained with from 5 to 10 per cent gum arabic are also unsatisfactory.

The roentgen irradiation of the spleen and bone marrow advocated by Stephan has not had the hoped for results even when used prophylactically. On the other hand, the solar irradiation suggested by Seiffert, which is directed toward correcting the Vitamin D deficiency, seems to be more effective.

Vasoconstricting agents such as adrenalin, ergot, gynergen, and styphnon, are effective under some circumstances. Styphnon is less powerful than



adrenalin but its action is more prolonged. It may be given by mouth subcutaneously, or intra-venously (caution in Basedow's disease).

Protein precipitating substances such as heavy metals acids and alum are to be employed only with the greatest care.

Thermic agents, such as heat and cold, do not fail but usually have a tissue damaging action. Such does not discuss electrosurgery other than to say that it represents a great advance but that its use demands a thorough knowledge of its dangers and technique. SILVERMAN (2)

Witts, L. J. Simple Achlorhydric Anæmia. *Guy's Hosp. Rep. Lond.* 1930 LVII, 253.

Achlorhydria may be associated with a primary or secondary type of anæmia. The primary type of anæmia is Addison's anæmia and the secondary type a simple achlorhydric anæmia.

Simple achlorhydric anæmia is a common condition. It occurs most frequently in middle aged women. The cardinal sign is achlorhydria which may be inherited or acquired. Glossitis and slight splenomegaly may also occur. The achlorhydria is a primary causative factor of the condition. It is found before the development of the anæmia and persists when the anæmia is cured. The anæmia is of the chlorotic type. There is no sign of increased hæmoglobin. The white cells and platelets are unaffected. The bone marrow is hyperplastic because of an increase in the erythroblastic tissue. The spleen may show an uncomplicated hypertrophy. No other changes are found at autopsy.

The treatment should consist of transfusion or the administration of large doses of iron. The effective dose of iron is twice the pharmacopœial dose. Liver and hydrochloric acid have no effect on the anæmia. Continuous treatment is necessary to prevent a relapse.

The relationship between simple achlorhydric anæmia and Addison's anæmia is discussed. The two conditions are closely related pathologically and in familial incidence. As a rule they show distinct differences but occasionally transitional forms occur.

Also discussed is the relationship between simple achlorhydric anæmia and the Plummer-Vinson syndrome of dysphagia and anæmia. The conclusion is drawn that these conditions are closely related.

HOWARD A. M. KNEPPER, M.D.

Gosio, R. A Case of Hæmohistioblastosis with Special Clinical and Hæmatological Characteristics. (Un caso di emoioblastosi con particolari caratteri clinici ed ematologici). *Polidin Rome*, 1930 XXXVI sez. med., 233.

The author discusses a previously reported case from the standpoint of differential diagnosis. Syphilitic subacute bacterial endocarditis of the splenomegalic type, Hodgkin's disease, the leukæmias and other possibilities are considered and ruled out. The condition ran a subacute course with splenomegaly and lymphadenopathy. From the symptoms, the

morphological study of the blood and the biopsy findings the author concludes that there was a fundamental alteration in the reticulo endothelial apparatus with predominance of the reticular side the latter being manifested by a formative impulse in its hæmohistioblast component in the blood.

However, the condition was not a reticulo endotheliosis hæmohistioblastosis leukæmic or aleukæmic reticulo endotheliosis, or monocytic leukæmia. Histologically, the blood showed different and not contemporary hæmohistioblastic pictures. Single stages were succeeded by apparently distinct transitional stages. The purely hæmohistioblastic stage and the megaloblastic stage with contemporary erythroblastic reaction were passed through up to the final leukæmia like stage with frequent pictures of hæmohistioblastic derivation. The final histological lesions corresponded to the result of this evolution and did not show all of the preceding cellular changes noted in the blood. ARMANDO P. CAMERO, M.D.

Ferrata, A. The Roentgen Rays in Hæmopathy (Emopatie e raggi roentgen). *Riforma med.* 1930 LVII, 835.

In acute leukæmia characterized by a sudden onset, high fever, hæmorrhage and a rapidly fatal course, roentgen treatment is of no value but in chronic leukæmia it is beneficial. In granuloma malignum roentgen irradiation is by far the most effective treatment, but while it may render the patient completely asymptomatic for a time the author has never known it to cure the condition.

Ferrata reports a case of pseudoleukæmia in which roentgen therapy was very beneficial. It may have a good effect also in pernicious anæmia. In lymphosarcoma it greatly slows the course of the condition. In hæmophilia it has not been successful, and in purpura hæmorrhagica its results are inconsistent. C. D. HANSEN, M.D.

Bodjanov, B., Belfajera, O., and Majanz, J. The Influence of Blood Transfusion on the Function of the Bone Marrow. (Zur Frage ueber den Einfluss der Bluttransfusion auf die Funktion des Knochenmarkes). *Witt a. d. Grenzgeb. d. Med. u. Chir.* 1930 XLII, 700.

The influence of blood transfusion on the reparative processes in the erythroblastic tissues was studied by the Ehrlich vital staining with the use of the technique of Schilling which makes the young or newly formed cells stand out prominently by reason of their granulated appearance. The amount of blood transfused was usually between 400 and 500 c.c., but in a few instances it was between 100 and 200 c.c. The cases were divided into three groups. In the first group were cases in which only transfusion was done, in the second group cases in which both transfusion and an operation were done and in the third group cases in which only an operation was done.

In the cases in which only operation was done no increase in the reticulocyte count was found after

the operation. On the contrary, the count immediately fell and returned to normal only gradually. Of the cases treated by transfusion alone, 84 per cent showed an increase in the reticulocytes, whereas of those treated by both transfusion and operation, only 64 per cent showed an increase in these cells. It is evident therefore that the operation had an inhibiting effect on the blood forming function of the bone marrow such as is exerted also by post-operative complications, infectious processes, and icterus. The substitution effect of the blood transfusion was manifested by the increase in the number of erythrocytes during the first few days after the transfusion, but on about the third or fourth day the stimulating effect on the bone marrow was manifested by the increase in the granulocytes. Simultaneous operation interfered with the complete development of the regenerative power.

The important practical conclusion which may be deduced from this study is that transfusion should precede operation by about a week. DRUEGG (Z)

#### LYMPH GLANDS AND LYMPHATIC VESSELS

Twort, C. C. The Etiology of Lymphadenoma. A Summary of Six Years' Researches. *J. Path. & Bacteriol.*, 1930, XLVIII, 539.

In observations extending over a period of six years in 106 cases of lymphadenoma, Twort failed to

find the primary causal agent or to verify the observations of other workers who claim to have found a specific parasite responsible for the condition. His studies included microscopic examination of sections, experiments on animals, cultivation experiments, and the direct examination of patients.

No single feature was discovered which would permit a certain diagnosis of lymphadenoma. The diagnosis was made most frequently in 61 definite cases with involvement of the glands, spleen, or bone marrow. The condition was rarely associated with tuberculosis. Inoculation of rabbits, guinea pigs, mice and monkeys with lymphadenomatous material failed entirely to produce the disease, but the blood of guinea pigs showed a transitory eosinophilia twenty-four hours after the inoculation. Animals sensitized by experimental injections of various bacteria were not rendered sensitive to injections of lymphadenomatous material. No growth which could be definitely associated with lymphadenoma could be found in any of the various culture media employed. Examinations of the stools of patients failed to show a specific organism. In patients suffering from lymphadenoma and allied blood disease the lipase content of the blood was lowered. Patients showed no positive immunity reactions to tuberculin injections or to vaccine or specific antisera prepared from lymphadenomatous tissue or filtrates.

CLARENCE V. BATEMAN, M. D.

# SURGICAL TECHNIQUE

## OPERATIVE SURGERY AND TECHNIQUE, POSTOPERATIVE TREATMENT

**Chevassu M** Intravenous Injections of Hypertonic Sodium Chloride Solution in Grave Postoperative Toxic and Infectious States (Les injections intraveineuses de chlorure de sodium hypertonique dans les états toxico-infectieux graves postopératoires) *Bull et mém Soc nat de chir* 1930 141 515

In Chevassu's opinion the beneficial effect of intravenous injections of hypertonic salt solution in grave postoperative toxic and infectious states is due not to the resulting increase in the quantity of chloride in the body but to an action produced by the entrance of the chloride into the blood which seems to depend principally upon the concentration of the chloride solution. The injection causes a sudden stimulation of the smooth muscle and especially of the intestinal musculature. It produces also a sudden afflux of tissue fluid into the blood which favors rapid elimination by the excretory organs particularly the kidneys of an appreciable quantity of the toxic elements that have accumulated in the lacunar system. Up to a certain point its action is comparable to the action of a purgative in the intestine as it causes a sort of vascular purgation.

Chevassu reports in detail two cases of postoperative toxæmia in which intravenous injections of hypertonic salt solution were followed by quick and marked improvement—one that of a man thirty-two years of age who was operated upon for a stone in the left ureter which had injured the function of the left kidney the other that of a woman forty-two years of age who was operated upon for a large uterine myoma causing retention of urine.

## ANTISEPTIC SURGERY TREATMENT OF WOUNDS AND INFECTIONS

**Barber H W** Staphylococcal Infections of the Skin *Guy's Hosp Rep Lond* 1930 1xxx 153

Normal clean skin is remarkably free from microorganisms. The healthy intact horny layer forms an efficient barrier but the mouths of the pilosebaceous follicles are in a sense breaches in its surface and a few cocci will be found lying as isolated units within them. These cocci are the common white staphylococci and the pityrosporon or spore of Malassez and the acne bacillus. They are normally saprophytic and only potentially parasitic.

The usual factor predisposing to the change from saprophytic to parasitic growth of these three organisms is an alteration taking place in the skin in their natural habitats. This is the morbid state of the skin called seborrhœa. The seborrhœic state

Organism	Habitat	Defence reaction	Lesion
<i>Pityrosporon</i>	Stratum corneum	Exfoliation of horny cells cuticular inflammation	Pellucle or dandruff seborrhœic or seborrhœic dermatitis
<i>Acne bacillus</i>	Infundibulum of pilosebaceous follicle	Proliferation of horny cells to enclose it dense leucocytic exudation	Comedo acne pustule
<i>Staphylococcus</i>	Ostium of follicle	Polymorphonuclear exudation	Pustule boil syphilis etc

is often a predisposing factor also in infections with more virulent strains of staphylococci.

The staphylococcus albus the least virulent of the staphylococci is a normal inhabitant of human skin which under favorable conditions is able to become definitely pyogenic. The staphylococcus aureus and the streptococcus pyogenes longus are not natural inhabitants of the skin. The staphylococcus citreus which is intermediate in virulence between the staphylococcus albus and staphylococcus aureus is occasionally found in place of the staphylococcus aureus.

Diseases of the skin caused by different strains of staphylococci are summarized in the following table.

Disease	Strain	Site and remarks
Staphylococcal pustule (pore-folliculitis)	Mild cases <i>S albus</i> Severe <i>S aureus</i>	Mouth of pilosebaceous follicle. In severe cases accompanying necrosis
Miliaria rubra (prickly heat)	<i>S albus</i> occasionally citreus	Intra-epidermal often around sweat ducts
Sycosis eccrina	<i>S aureus</i> occasionally citreus or albus	Intra-epidermal in upper third of follicle rarely deep. Confined to parts with coarse hair. Inhibition of dermis with mononuclear cells
Sycosis nuchæ	<i>S aureus</i>	Fold lines of nape of neck. Dense periductular infiltration of dermis
Acne necrotica	<i>S aureus</i> superadded to B. acnes	Horrorous of mouth of follicle rarely infected with B. acnes involving the whole epidermis and a portion of the dermis
Boils (furuncle)	<i>S aureus</i> rarely citreus	Primarily mouth of follicle spreading to deeper part and accompanied by massive necrosis of follicle and surrounding dermis
Carbuncle	<i>S aureus</i>	Several follicles with massive necrosis of surrounding dermis and even subcutaneous tissue
Multiple abscesses of infants	<i>S aureus</i> or albus	Intra-dermal infection spreading by way of sweat ducts
Hydradenitis	<i>S aureus</i> or albus	Intra-dermal or subdermal in relation with the apocrine sweat glands. Axilla or perianal region
Granuloma pyogenum	<i>S aureus</i>	Dermal. Pedunculated and vegetative types

Dermatitis infectiosa eczematoides	S aureus or albus	Intra-epidermal eczematoid reaction due to sensitization of epidermis to a staphylococcus
Pemphigus neonatorum	S aureus possibly a special strain	Primarily bullous the bullae being formed between the stratum corneum and the rete as in streptococcal impetigo
Acrodermatitis continua	S aureus apparently a special strain	Intra-epidermal abscesses formed beneath horny layer and involving subjacent rete. Paronychia a characteristic
Onychia and paronychia	Usually S aureus	Nail bed and periungual tissue

The differences between staphylococcal and streptococcal infections may be summarized as follows

Staphylococci	Streptococci
Some strains natural inhabitants of skin	Are more likely to invade skin from some previous host or from mucous membranes
Tend to involve pilosebaceous follicles most staphylococcal eruptions being therefore primarily follicular	Have no predilection for follicles but tend to involve natural folds of skin and to form fissures
Do not as a rule cause lymphangitis or adenitis	Are prone to invade lymphatics and cause adenitis
Are powerfully chemotactic for polymorphonuclear leucocytes thus producing laudable pus	Are less pyogenic and tend to provoke exudation of serum containing only a few cells
Lesions tend to remain pure i.e. do not usually become secondarily infected with other organisms	Lesions always become secondarily infected with staphylococci which may then form primary follicular lesions e.g. a staphylococcal abscess may follow a streptococcal impetigo

Although the pilosebaceous follicles are the most common sites of active staphylococcal growth, in miliaria rubra, multiple abscesses of infants, and hidradenitis the lesions are in relationship to the sweat ducts or glands. Although pemphigus neonatorum is considered by some to be merely a variety of streptococcal impetigo occurring in newly born infants, most observers are now agreed that the causal organism is staphylococcus aureus. In two atypical forms of staphylococcal infection, acrodermatitis continua, of which the dermatitis repens of Crocker is the localized variety, it seems that special strains may be responsible for the peculiar features of the eruptions.

The superficial follicular pustule, the boil, and syphilis coccigenica may be regarded as type forms of staphylococcal dermatoses. The simplest and commonest staphylococcal lesion of the skin is the small superficial pustule formed at the ostium of a pilosebaceous follicle and caused by staphylococcus albus. A boil is a massive folliculitis due almost invariably to the staphylococcus aureus (rarely to the staphylococcus citreus) and characterized by the intensity of the inflammatory reaction and by necrosis. Of particular importance are the lesions occurring in the vestibule of the nose and on or near the upper lip as in these the infection may spread to the cavernous sinus and result in septic thrombosis with ultimate pyæmia and death.

Although not so contagious as streptococcal impetigo, active lesions due to the staphylococcus aureus are certainly a potent source of infection to others by direct or indirect contact. The growth of the staphylococcus aureus is favored by the seborrhæic skin, hyperglycæmia, an unhygienic indoor life, overwork, anæmia, an excessive or inadequate diet, and chronic infections elsewhere.

By the term "syphilis" is meant a pustular folliculitis of the hairy parts. Two forms are recognized—one a simple syphilis or syphilis coccigenica, due to infection of the follicles with staphylococcus, the other tinea syphilis, due primarily to infection with a ringworm fungus but later complicated by invasion with pyogenic organisms. The infection is superficial intra-epidermal, and localized to the upper third or quarter of the follicles. Syphilis begins as an attack of acute porofolliculitis. The essential difference between the two forms of folliculitis is that in simple porofolliculitis the epidermis is able to deal with the infection and the pustules occur singly and heal spontaneously, whereas in syphilis the epidermis has lost its defensive power and new pustules keep on forming in it beneath the older ones. Sabouraud says that when an infection, as in syphilis, is limited to the epidermis, vaccines given by subcutaneous injection are useless but when the epidermal barrier is passed and the dermis is itself infected, they may be expected to give good results.

The treatment of active lesions, e.g. boils and carbuncles, by poultices and fomentations is entirely irrational. The research of Besredka suggests that immunity to staphylococcal infections is a function of the skin and mucous membranes. When given subcutaneously in syphilis vaccines are disappointing but when injected intracutaneously are of very definite value.

Most effective in the treatment of staphylococcal infections of the skin is an outdoor life. Heliotherapy is one of the best methods of raising the resistance. If an outdoor life is impossible, good results may be obtained by means of artificial heliotherapy. The majority of patients with a low resistance to staphylococcal infection are seborrhæic.

Medicinal treatment depends almost entirely on the indications established by a complete examination of the patient. Fresh brewers' yeast in doses of from ½ to 1 oz. mixed with soda water and taken half an hour before meals twice or three times daily is worthy of a trial, but its effect is inconstant. More convenient, but less efficacious, are the various brands of compressed yeast tablets. A preparation of tin (stannoxyl) has also been used, given in full doses, it appears to be of benefit in some cases but it often fails entirely. Although in many suitable cases of staphylococcal infection a stock vaccine is successful, an autogenous vaccine is preferable. Vaccine treatment is indicated particularly in conditions in which the dermis is involved, such as furunculosis, but intradermal injections are of value also in epidermal infections.

In furunculosis the first essential of treatment is disinfection of the skin over a considerable area around the boil. Many chronic cases of furunculosis respond to this simple method of surface antiseptics. An incipient boil may sometimes be aborted by making a small incision with a fine von Graefe knife and plunging through this into the center a sharpened match stick dipped in pure carbolic acid monool or lysol. In addition to the local application of dilute iodine and ichthol and a daily antiseptic bath pulverized salicylic acid compositus B.P.C. should be dusted on the skin surrounding the boil and in the joint flexures.

In scabies it is impossible to effect a cure by local antiseptic applications as these cannot penetrate to the depth of the horny layer much less to the infundibula of the follicles or the rete malpighii. However an attempt may be made to limit the spread of the infection by painting the surrounding skin with a 1 per cent tincture of iodine. In chronic cases epilation is advisable. By far the quickest result is obtained by radiotherapy. A single epilation dose usually produces an apparent cure but relapse is the rule when the hair regrows. Epilation with forceps though tedious and painful has the advantage over radiotherapy that it may be continued indefinitely. It should be carried out not only on the affected area but also beyond it to prevent extension.

FRANK J. MCGOWAN, M.D.

## ANÆSTHESIA

**Sanvenero F.** Modern Problems of Anæsthesia with Special Reference to Postoperative Complications (I problemi moderni dell'anestesia con particolare riguardo alle complicazioni postoperatorie). *Arch. ital. di chir.* 1930 xiv 717.

**Bufalini M.** Postoperative Lung Complications and Their Relation to Anæsthesia (Le complicanze polmonari postoperatorie in rapporto all'anestesia). *Arch. ital. di chir.* 1930 xiv 724.

**Bianchi G.** Postoperative Pulmonary Complications from the Point of View of Roentgenology (Le complicanze polmonari postoperatorie dal punto di vista radiologico). *Arch. ital. di chir.* 1930 xiv 730.

SANVENERO reviews the Italian literature on modern methods of inducing anesthesia and his own experience with these methods. He has found combinations of nitrous oxide oxygen ethylene and oxygen and acetylene and oxygen of great value. Ethylene and oxygen and acetylene and oxygen however are dangerous on account of explosiveness. When nitrous oxide is used the anesthesia is induced quickly and the patient regains consciousness quickly. The margin of safety is greater in acetylene and ethylene anesthesia than in nitrous oxide oxygen anesthesia. The objection raised most frequently to gas anesthesia is that it is not deep enough. When nitrous oxide is used the effect of the anæsthetic is increased by the anoxæmia caused by the carbonic acid, but if the anoxæmia is too prolonged and deep it may cause death.

Acetylene is superior to the other gases in the depth of the narcosis produced and the ease of its administration. Gas is less injurious to the system than chloroform or ether. Experiments with acetylene have shown that it does not injure the circulation, respiration, liver, or kidneys and it does not cause any special change in the acid base equilibrium or in the blood. Bronchopulmonary complications are rare after the use of gas their incidence being no higher than after local anesthesia. The repeated use of gas at brief intervals does not decrease its anæsthetic action or increase the incidence of post-anæsthetic complications. It is indicated particularly in cases of serious disease and those in which chloroform and ether are contra indicated.

Chloroform and ether give complete relaxation but are dangerous. Chloroform is being used less frequently. Solisthine is not much better. Scopamine has an unfavorable effect on the medullary center of respiration and favors bronchopulmonary complications and circulatory collapse.

In the complications of anesthesia in general lobelin is a valuable stimulant of the respiratory center and intracardiac injections of adrenalin are effective in reviving the heart. Carbonic acid is a heroic stimulant for the respiratory center and the treatment of acute pulmonary collapse.

In avertin anesthesia induced by rectum careful watching is necessary. The incidence of bronchopulmonary complications is no higher than after local anesthesia but avertin has an unfavorable effect on the liver. When avertin is supplemented by a small amount of the ordinary anæsthetics it gives sufficient relaxation for even serious operations. It prevents psychic shock and is indicated for orthopedic operations on children. It is of value also for operations on the mouth, nose and pharynx as it leaves the field of operation free and does not increase the secretion of saliva. It is contra indicated for operations on the thorax because of the cyanosis it causes. It is contra indicated also by pulmonary tuberculosis, low blood pressure, insufficiency of the heart, liver or kidneys and inflammations of the intestines. Among its advantages are its rapid absorption and the impossibility of stopping the anesthesia after it has begun.

An advantage of the induction of anesthesia by the intravenous route with ether is rapid elimination of the ether. The association of isopropyl with ether sometimes causes serious accidents such as thrombosis and embolism and less serious sequelæ such as temporary hemoglobinuria and albuminuria. When ether is combined with hedonal there is danger of asphyxia. When somnifen is used there may be agitation or torpor for three or four days and the addition of chloroform is usually necessary to obtain sufficient anesthesia. Pernoxon is a good basic anæsthetic and reduces the quantity of ether necessary from 50 to 70 per cent, but it is dangerous in doses large enough for complete anesthesia.

Local regional and trunk anesthesia cause the least functional disturbances of the heart, kidneys,

and liver. The best agents for anaesthesia of these types are novocain and tutocain.

Spinal anaesthesia is used a great deal in Italy and in France, but is not much in favor in America and is losing favor in Germany and Austria. It does not injure the function of the liver or kidneys, does not disturb the acid base equilibrium, and rarely causes bronchopulmonary complications. Occasionally it causes intoxication of the medulla resulting in death. Its less serious temporary sequelae are anal incontinence, headache, retention of urine, vomiting, fever, various psychic disturbances, and circumscribed paralyses. Spinal anaesthesia is contraindicated particularly in shock, intoxication, septicæmia, pyæmia, anaemia, and untreated and incompletely cured syphilis.

BUFALINI gives various statistics on the incidence of pulmonary complications following the use of different anaesthetics, but concludes that though the type of anaesthesia has a certain amount of influence in determining such complications, it is not the direct or the chief cause of them. While some statistics show a higher incidence of lung complications after the use of certain anaesthetics than after the use of others, other statistics show little difference in this respect. From a review of 149,029 cases, Featherston came to the conclusion that there is very little difference in the lung complications after the use of ether, chloroform, gases and oxygen, and local anaesthesia. Musgrave came to the same conclusion on the basis of 36,602 cases. It therefore appears that pulmonary complications depend on the operation rather than the anaesthetic and that many factors entirely independent of the type of anaesthetic may be responsible for them. Further progress in preventing postoperative lung complications will depend on a closer study of the factors in the operation and the disease for which it is performed that tend to cause such complications.

BIANCHI reports the findings of roentgen examination of the chest in 173 cases in which a surgical operation had been performed. In cases with a normal postoperative course he frequently found decreased expansion of the lungs, particularly at the base, and more or less opacity of the lower lobes which he thought due to partial atelectasis. These changes are almost always seen after a laparotomy and are not observed after operations on the head, neck, or limbs. Patients subjected to thoracic operations never showed decreased thoracic respiration. After laparotomy, the abdomen frequently showed meteorism and atony of the loops of intestine which would certainly affect the diaphragm and the expansion of the base of the lungs.

The findings in the lungs were not particularly different in cases operated on under different types of anaesthesia. The pulmonary complications seemed to depend on the operation rather than on the kind of anaesthesia.

In order to determine the frequency of the aspiration of foreign substances during anaesthesia, the author left opaque liquid in the mouth during

the operation and afterward examined the bronchial tree for it. In the 4 cases examined he found none of the opaque liquid in the bronchi.

In postoperative lung complications the findings are just the same as those of ordinary acute bronchopneumonia. They are almost always bilateral, but are more severe on one side than on the other. The forms seen were always at the base, at least in the beginning. Lobar pneumonia is exceptional. Roentgen examination generally shows the disease before physical examination, and the picture persists after the clinical symptoms have ceased.

In the discussion of these reports, CHIASSERINI emphasized the importance of the trained anaesthetist in the prevention of postoperative complications. He stated that the incidence of complications following different kinds of operations should be determined. In 26 of his cases of resection of the stomach in which pulmonary complications occurred the frequency of these complications was the same after general and local anaesthesia. In 60 cases of operation on the liver there were no serious pulmonary complications, but 3 of the patients died of acute fatty degeneration of the liver. In all of these 60 cases ether had been used. Spinal anaesthesia is excellent for operations on the liver. Chiasserini uses local and nerve trunk anaesthesia freely. It is indicated particularly for brain surgery and for operations on the face and neck. Chiasserini has had excellent results from epidural anaesthesia, especially in operations on the anus and prostate. His results with rectal anaesthesia were less satisfactory. He has recently employed nitrous oxide with Demarest's apparatus. With the use of a small amount of ether, complete anaesthesia can be induced. Chiasserini has never had a case of postoperative pulmonary embolism. He believes it has no relation to the type of anaesthesia used.

GUIRON said that he agreed with Sanvenero as to the superiority of gas to other anaesthetics, but disagreed with him with regard to the inferiority of nitrous oxide, he prefers the latter to all other gases because it gives a deeper anaesthesia.

ALESSANDRI said that he had experimented with different gases and prefers ethylene.

VALOONI said that he agreed that postoperative complications are not always due to the anaesthetic. He thinks they are often caused by immobility of the diaphragm and infection of the field. He has sometimes seen zones of atelectasis or infarction at the base of the lungs and anemic infarction of the liver. He believes that these may be caused by thromboembolism due to venous congestion in the lower lobes brought about by fixation of the diaphragm.

POTOSCHNIK said that in his opinion local anaesthesia should be employed more extensively, and that its more extensive use would decrease the incidence of lung complications. He advocated Braun's splanchnic anaesthesia, which he has used in 137 cases with only 2 partial failures. This type of anaesthesia is preferable to local anaesthesia because

it is of longer duration has less effect on the blood pressure, and is entirely free from danger. In his last 100 gastroduodenal resections for ulcer of the duodenum Potoschnig used general anesthesia in only 8 cases.

ROSSI said that the inconveniences of gas anesthesia are all of a technical nature and can therefore be eliminated by improvement in the apparatus and technique.

BOLIERI attributed the decrease in the incidence of postoperative pulmonary complications on his service during the last eight years to the more frequent use of spinal anesthesia, respiratory gymnastics, movement of the patient from the first day, and daily intramuscular injections of colloidal silver for two or three days before and after operation.

FASINI emphasized the importance of roentgen examination to determine the first signs of pulmonary complications. He believes that lung complications are less frequent after local and regional anesthesia, particularly after laparotomies. In 110 cases in which he performed a laparotomy in the last two years usually under spinal anesthesia, there were no pulmonary complications.

ANZILOTTI said that he favors spinal anesthesia induced with 7 per cent tropacocaine.

SALVENERO said that it is important to have a skilled anesthetist particularly in the induction of anesthesia with nitrous oxide. He demonstrated the simplicity of the use of the acetylene mask.

BURAKIVI said that high spinal anesthesia has a tendency to paralyze the intercostal muscles and thus decrease respiratory excursions and bring about conditions favorable to postoperative pneumonia. He believes that the incidence of lung complications is lower after local and gas anesthesia than after ether anesthesia.

GHIMOV said that statistics show a higher incidence of embolism after gas anesthesia than after the use of ether, and that clinical experience shows no parallelism between the seriousness of the operation and the frequency of embolism. Experiments made by Oselladore which demonstrated the effect of abdominal irritation and anesthetics on the smooth musculature of the bronchi and lungs have opened up a new field for the study of the pathogenesis of postoperative pulmonary complications.

ALDEN G. MORGAN, M.D.

# PHYSICOCHEMICAL METHODS IN SURGERY

## ROENTGENOLOGY

Sabat, B. Intracavitary Roentgenography, Especially Intrarectal and Intra-gastric Roentgenography (Ueber die intracavitäre Roentgenographie speziell des intrarectale und die intra ventriculäre) *Polski Przegląd radiol.*, 1929, IV, 263

The author gives a preliminary report on a new procedure for roentgenological examination in which small films on suitable film carriers are introduced into hollow viscera such as the rectum, stomach, and oesophagus. He describes three types of film carriers for the rectum which make it possible to introduce the film easily and without causing injury and to remove it in the same manner after the exposure has been made. When the film carrier is introduced into the rectum the film is rolled or folded up within it. After its insertion it is spread out by means of a simple mechanism for the making of the exposure. After the exposure has been made, it is again drawn back into the film carrier and the carrier then withdrawn.

Intrarectal roentgenography will make it possible to obtain sharp and detailed pictures of the sacral vertebrae which cannot be obtained with the usual method of exposure. Sabat believes that it may be used also for X-ray diagnosis of early pregnancy.

By means of intra-gastric roentgenography more distinct pictures of the mucous membrane of the stomach can be obtained. The apparatus for intra-gastric roentgenography consists of a bougie with a suitably constructed guide which serves as the film carrier.

Sabat hopes that intracavitary roentgenography will prove of diagnostic aid also in diseases of the oesophagus, pharynx, and colon. ZILLNER (Z)

Ottoneilo, P. The Value of Potassium in Radio-biology (Il valore del potassio in radiobiologia) *Radiol. med.*, 1930, XVII, 580

The author reviews the theories of the mechanism of cell division in normal and neoplastic tissues. Regardless of the many possible factors, mechanical, physical, chemical, and microbial, the mechanism is due ultimately to photochemical radiations. Potassium, the only biologically important radioactive element, assumes an essential role in this mechanism, through the formation of beta rays. However, hyperpotassaemia which frequently is noted in association with malignant disease is of negligible diagnostic value.

The sympathetic nervous system plays an important but not well understood role in cell division. Variations in the irritability of this system, whether spontaneous or secondary to physico-chemical or X-ray changes may increase or inhibit neoplastic growth. Irradiation of a portion of the

body distant from a tumor may have a favorable effect upon the tumor.

The author reviews also the theories of the action of the X-rays on the body. Exposure of cells to the X-rays results in the liberation of corpuscular rays (essentially beta rays or electrons) which take part in the ultimate action on the cells. The susceptibility of cells to the X-rays is variable. The more actively growing cells are especially susceptible. Potassium stimulates cell division, thereby increasing the susceptibility of a greater number of cells to the X-rays.

Potassium is suggested as an ideal adjunct to radiotherapy because it does not harm normal tissues, it has an affinity for neoplastic tissues, its radiations stimulate the slowly growing X-ray resistant cells, and is easily administered.

A LOUIS ROSE, M.D.

## RADIUM

Larkin, A. J. The Cause of Death from Radium. *Radiology*, 1930, XV, 296

In an attempt to determine the cause of death due to the general effect of the gamma rays of radium, one group of rabbits were exposed to the rays of radium at an average distance of 6.25 in. and another group to the rays at an average distance of 8.5 in. The radium was placed in the center of the cage and 2 in. from the floor. Data such as the ages and weights of the animals, the dose of radium, the number of days the animals were observed, the blood changes, and the microscopic findings are summarized in tables. One group of rabbits received a lethal dose and another group a sublethal dose.

It was found that in all instances death was preceded by a loss of weight, either actual or relative. Rabbits receiving a lethal dose of radium irradiation showed an average loss of weight of 8 per cent, whereas under normal conditions they should have shown a gain of 52 per cent in the same period of time. In the rabbits receiving the sublethal dose of irradiation the loss of weight was distinctly less. In all of the animals the white blood cell count was reduced although a temporary leucocytosis occurred. When the white blood cell count fell below 2,200, the animals died. The lowest recorded leucocyte count was 500. All of the animals became extremely apathetic for from twenty-four to thirty-six hours preceding death. Failure to eat for forty-eight hours usually presaged death. Four clinical findings which were constantly noted and varied in intensity directly with the dosage were loss of weight, leucopenia, apathy, and anorexia.

The lethal dosage seemed to vary with the age of the animals, but no relationship between the



dosage and body weight *per se* was apparent. Another observation of significance was the time required for the lethal dose to act. The average elapsed time between the treatment and death was seventeen days which is in accord with the period of maximum destruction in tissues observed in clinical practice. A third observation of importance was the duration of the exposure. Doses delivered within six days were equivalent to a single dose. Doses delivered in more than six days had to be larger to be lethal. Inferences regarding the latent period might be drawn from the findings.

The microscopic changes of greatest significance were found in the bone marrow, spleen, kidney, liver and thymus gland. These changes are summarized in tables. The red blood cells showed little change, but the embryonic forms in the bone marrow were increased. Marked cloudy swelling of the convoluted tubules of the kidney and granular cytolysis in the liver cells were found. In many of the animals the thymus gland was entirely destroyed. The cause of death could not be determined definitely.

#### MISCELLANEOUS

Gram H. C. and Møller P. F. The Results of Carbon Arc Light Treatment of Intestinal Tuberculosis. *1171 radsof* 1930 21 133.

In eighteen cases of phthisis in which roentgen examination showed marked signs of intestinal

tuberculosis the patients were re-examined after prolonged treatment with general carbon arc light baths. In five the intestinal condition was completely cured, in three, nearly cured, in two, very much improved, in three somewhat improved and in four, unchanged. In one case the result was doubtful.

In seven cases in which there was a slight temporary diarrhoea, the diarrhoea never recurred after the light treatment. In no case was the diarrhoea severe or typical enough to warrant a diagnosis of intestinal tuberculosis without the aid of the roentgen examination.

In nearly all of the cases the treatment was followed by more or less marked improvement in the general condition. Most of the patients took on weight in a satisfactory manner. Some of them gained weight even during the period in which the light baths were given. Over dosage of light may result in a sharp loss of weight but this does not seem to have a permanent ill effect.

In the cases in which the intestinal process became healed the sputum continued to show the tubercle bacilli.

The number of light baths varied from twelve to seventy-five and averaged forty-nine. The dosage was increased from ten to fifteen minutes to one or two hours at a sitting.

The re-examination of the intestine was made after from two and a half to ten and a half months.

## MISCELLANEOUS

### CLINICAL ENTITIES—GENERAL PHYSIOLOGICAL CONDITIONS

**Blalock, A.** Experimental Shock. The Cause of the Low Blood Pressure Produced by Muscle Injury. *Arch Surg*, 1930, **xx**, 959

Goltz, in 1863, found that a blow on the exposed mesentery of the suspended frog caused reflex inhibition of the heart through the vagus and a lessening of vascular tone throughout the body but especially in the abdominal cavity. This is the condition that has been termed "primary shock" or "collapse."

The shock studied by the author is that which has been more recently recognized as secondary shock. The most divergent views have been expressed as to the cause of this condition. Crile and his associates ascribe secondary shock to exhaustion of the vasomotor center due to prolonged sensory stimulation resulting in general relaxation of the large vessels, a fall in the arterial blood pressure, an accumulation of blood in the large veins, and a decrease in the diastolic filling of the heart and the cardiac output. According to others, the arterioles are markedly constricted in shock. Most investigators believe that shock is associated with a decrease in the volume of the circulating blood, but there has been much disagreement as to the cause of this decrease. Malcolm believed that the constriction expresses plasma from the blood stream. Starling thought that most of the loss of circulating fluid occurs into the dilated capillaries of skeletal muscle. In 1917, Bayliss, Bainbridge, Cannon, and others, working as a special committee appointed by the British Medical Research Committee to investigate shock and allied conditions, performed experiments on cats, in which they produced a low blood pressure by traumatizing one of the posterior extremities. It was assumed that the continued fall in the pressure following trauma was produced by the absorption of some depressant substance, either histamine or a fairly closely related substance. Other theories advanced in explanation of shock include (1) the theory of inhibition, (2) the theory of fat embolism, (3) the theories of supranal hyperactivity and hypo-activity, (4) the theory of acidosis, and (5) the theory of *acapnia*. All of them lack proof.

The experiments reported by Blalock were suggested by the observation that the oxygen content of blood obtained from the portal vein was much higher after low blood pressure had been produced by trauma to the intestines than after a proportionate decline in pressure obtained by other methods, and that the oxygen content of blood from the femoral vein of a traumatized leg was high, while that of blood from the femoral vein of the opposite extrem-

ity was low. These observations indicated that a local accumulation of blood occurs in a traumatized area and were considered as evidence against the action of a histamine-like substance producing a general bodily effect.

All of Blalock's experiments were performed on dogs anesthetized with barbital. The blood pressure was determined frequently. The results and conclusions drawn from them are summarized as follows:

1 The blood pressure could not be reduced to a shock level by trauma to one of the posterior extremities without causing the loss of a sufficient part of the blood volume into the traumatized area to account for the decline in the pressure. There was a greater proportionate loss of plasma than of red cells. This accounts for the concentration of the blood elsewhere.

2 The injection of histamine into the patent femoral artery of a thigh which was tightly constricted by a tourniquet in some instances caused a fall in the blood pressure. After the uppermost part of the femur had been removed, the injection of histamine into the artery did not cause a decline in pressure if the tourniquet was properly applied.

3 After the femoral artery had been freed in the groin and a tourniquet had been placed around the thigh to constrict all structures except the artery, no appreciable decline in pressure resulted whether the femur was or was not resected. The injection of histamine into the artery caused no greater alteration in the pressure than the simple application of the tourniquet. The application of tourniquets to both thighs by the same method caused a marked fall in the blood pressure.

4 A fall in the blood pressure to a low level was produced by trauma to an extremity when the thigh, with the exception of the femoral artery, was constricted by a tourniquet. A sufficient amount of hemorrhage occurred into the traumatized part to account for the decline in the blood pressure. This occurred whether the upper part of the femur had or had not been removed.

5 Removal of the tourniquet which had constricted all of the structures of the thigh except the femoral artery for a long time caused a fall in the blood pressure whether or not there had been trauma.

6 After the femoral artery and vein had been dissected free in the groin, a clip had been placed on the vein, and a tourniquet constricting all of the structures of the thigh except the artery and vein had been applied, removal of the clip from the vein usually did not cause a fall in the blood pressure. The result was the same whether there had or had not been trauma, and whether the upper part of the femur had or had not been removed.

7 When the arterial inflow and the venous outflow to an extremity were entirely occluded gross trauma to the extremity did not produce a fall in the blood pressure

8 Massage of either the traumatized or the non traumatized extremity usually produced a temporary reduction in the blood pressure

9 After the blood pressure had been lowered by trauma to an extremity occlusion of the terminal aorta and vena cava was followed by a fall a rise or no alteration in the blood pressure

10 If the terminal abdominal aorta or vena cava of the dog was occluded for an hour, release of the occlusion did not result in the production of a low blood pressure

11 The transfusion of blood from one dog in which a low blood pressure had been produced by trauma to an extremity to another dog in which a low blood pressure had been produced by a loss of blood external to the body or into the tissues of the body resulted in an elevation of the blood pressure in the recipient

12 The intravenous injection of histamine caused definite alterations in the gall bladder Trauma to extremities did not produce these changes

13 Trauma to an extremity did not cause a congestion of blood in the intestinal tract or the accumulation of free fluid in the peritoneal cavity

14 The experiments therefore offered no evidence that trauma to an extremity produces a toxin that causes a general dilatation of capillaries with an increase in capillary permeability and a general loss of fluid from the blood stream Neither did they lend support to the theories that shock is due to fat embolism audios acapnia suprarenal hyperactivity or hypo activity or vasomotor exhaustion In all of these experiments on dogs anesthetized with barbital there was a sufficient loss of blood volume into the traumatized area to account for the reduction in the blood pressure The time interval which elapsed between the initiation of the trauma and the reduction of the blood pressure to a shock level was probably not sufficiently great to rule out the effects of decomposition products which are very slow in their action However in the time required for the production of a low blood pressure these experiments are comparable with those of other investigators whose theories have been discussed No definite conclusions can be drawn from the findings with regard to the mechanism of the production of shock in man

MORRIS H KAHN MD

Jaffe R H Malignant Tumors of the Nail Bed  
*Surg Gynec & Obst* 1930 1 847

Melanoma of the nail bed frequently shows only slight pigmentation or is changed in its appearance by secondary infection It metastasizes rapidly even while it is small but is frequently taken for a harmless inflammatory condition It is a rare neoplasm

The author reports the case of a woman sixty nine years of age who gave a history of pain in the right

first toe for three years During the past year the toe had become swollen and had bled on several occasions The nail was almost completely replaced by a soft dark red easily bleeding mass and the terminal phalanx was moderately swollen X ray examination was negative A mass of enlarged glands the size of an egg was found in the right groin The terminal phalanx of the right first toe was removed and the glands in the groin were treated with the X ray Microscopic examination of the specimen showed round and oval spindle cells with clear cytoplasm multiple mitotic figures and several cells containing brownish pigment

Also reported is a case of squamous cell carcinoma of the nail bed of the fifth toe The patient was a man sixty three years of age Pain had been present in the right fifth toe for several years and for several months had been more severe The terminal portion of the toe was transformed into a dry firm mass which had been diagnosed as senile gangrene The nail was replaced by an irregular ulcer with slightly raised irregular edges At operation, the middle and terminal phalanges were removed Microscopic examination showed keratosis down growth of papillary polyhedral cells mitotic figures, and poorly bodies

Benign tumors of the nail bed include subungual fibroma Dupuytren's subungual ectostosis and the so called angiosarcoma or perithelioma The angiosarcoma consists of smooth muscle fibers and nerve cells arising about the small skin arteries It appears as a painful blue spot The microscopic picture suggests malignancy but the tumor is clinically benign

The prognosis of melanoblastoma of the nail bed is serious the average length of survival after the diagnosis made being only fourteen months There is no record of a case in which this tumor developed before the thirty fifth year of age The absence of local metastases does not preclude internal metastases

HARRY C SALTSTEIN MD

#### GENERAL BACTERIAL, PROTOZOAN, AND PARASITIC INFECTIONS

Coste F and Stefanescu V Septicemia Due to the Bacillus Pyocyaneus (Septicémie à B pyocyanique) *Bull et mem Soc d'hop de Lar* 1930 VII 307

General infection due to the bacillus pyocyaneus has become rare since the beginning of the anti septic era and the disappearance of blue pus The case reported by the authors was that of a man aged fifty years who entered the hospital with the diagnosis of diphtheritic angina after being ill for three days The patient complained of slight inconvenience in swallowing pharyngeal pain, and fatigue His temperature was 38 degrees C

In the lower part of the right anterior pillar of the fauces there was an apparently superficial ulceration with regular edges which was covered by a grayish exudate having a membranous appearance Examination revealed also discrete adenopathy in

the inframaxillary angle, marked asthenia, slight icterus of the skin and mucous membranes, enlargement and sensitivity of the liver, and splenomegaly. The urine was dark and gave a positive Gmelin reaction.

The patient had recently arrived from a several years' stay in Colombia, where he had contracted malaria. The malaria seemed to explain the slight jaundice and the hepatic and splenic enlargement.

A culture was made from the pharyngeal exudate and 80 c m. of anti diphtheria serum were injected.

A few hours after the patient's admittance to the hospital his condition suddenly became much worse. The temperature and jaundice increased, and death occurred the following morning.

The jaundice was found to be due to hepatitis. The visceral congestion and splenomegaly were in accord with the infectious nature of the condition. From the culture of the pharyngeal exudate on coagulated serum there was isolated, almost in a pure state, a fine mobile bacillus which did not take the gram stain, grew luxuriantly on a grayish glairy layer to which it imparted a greenish tint, presented the characteristics of bacillus pyocyaneus on several media, and was a good producer of pyocyanine identifiable by the Gessard procedure. Blood cultures made soon after death showed the same bacillus in a pure state.

The usual clinical form of septicæmia due to the bacillus pyocyaneus has cutaneous and hemorrhagic manifestations. Arloing, Dufourt, and Langeron call it a septicopycæmia rather than a septicæmia, but the authors believe that the condition in their case is better described as a septicæmia because of the great multiplication of the micro organisms in the blood. A pharyngeal origin of the infection is rare.

It was evident from the results of experiments on rabbits and guinea pigs that the bacillus is atoxic and that it has no hæmolytic properties. It seemed to have a bacteriolytic effect on the diphtheria bacillus.

In the discussion, APERT reported a case of septicæmia due to the bacillus pyocyaneus in a child thirteen years of age. The infection was mild and the febrile septicæmic stage short. Apert called attention to the predominance of pulmonary involvement and the astonishing persistence of obscurity of the left base in this case. The urine was a brownish red as if iodine had been added to it. Apert is of the opinion that the red pigment eliminated was secreted by the bacillus itself. The bacillus turned the culture media green. The pigment disappeared from the urine at the same time that the fever fell and the blood culture became negative.

FIESSINGER referred to work he carried out during the war with regard to bacteriolysis by the bacillus pyocyaneus. He attributes the bacteriolytic power of the bacillus to its proteolytic action. PAGE.

Ball, H. A. Human Torula Infections—A Review. *California & West Med.*, 1930, LXIII, 338.

Torulæ are yeast like micro organisms belonging to the group of fungi imperfecti and characterized by a transparent capsule. Torula infection in man occurs most frequently at middle age. It involves chiefly the central nervous system and the lungs. The absence of bone lesions and the extreme rarity of skin lesions are striking. The atrium of invasion is probably always the respiratory tract. The most prominent symptom is headache. Twenty seven cases of systemic and four cases of local, torula infection in man have been reported. The organisms in these cases differed somewhat in their cultural characteristics and in their pathogenicity to laboratory animals.

In obscure neurological conditions, especially those associated with severe headache, a microscopic study of the spinal fluid should be made with the possibility of yeast infection in mind. Even when ulcerative tuberculosis of the lungs is present, a diagnosis of tuberculous meningitis should not be made unless acid fast bacilli can be demonstrated in the meningeal exudate. SAMUEL KAHN, M.D.

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